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ACCOUNTS AND PAPERS:

THIRTY-NINE VOLUMES.

— (27.) —

SHIPPING (UNITED KINGDOM).

Session

1 February — 10 August 1866.

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1866.

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ACCOUNTS AND PAPERS :

1866.

THIRTY-NINE VOLUMES:—CONTENTS OF THE TWENTY-SEVENTH VOLUME.

N. B.—*THE* Figures at the beginning of the line, correspond with the N° at the foot of each Paper; and the Figures at the end of the line, refer to the MS. Paging of the Volumes arranged for The House of Commons.

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RETURN to an Order of the Honourable The House of Commons,
dated 8 March 1866;—for,

- RETURN “ of the NUMBER and TONNAGE of SAILING VESSELS Registered at each of the Ports of *Great Britain* and *Ireland*, including the *Isle of Man* and the *Channel Islands*, distinguishing those under and those above Fifty Tons Register, on the 31st day of December 1865 :”
- “ Similar RETURN of STEAM VESSELS and their TONNAGE :”
- “ RETURN of the NUMBER and TONNAGE of VESSELS that Entered and Cleared Coastwise, at each of the Ports of *Great Britain* and *Ireland*, *Isle of Man*, and *Channel Islands* (including their repeated Voyages), distinguishing British from Foreign Vessels, and Steam from Sailing Vessels, between the 31st day of December 1864 and the 31st day of December 1865 :”
- “ Like RETURN from and to the COLONIES, further distinguishing British from Foreign Vessels; also, from and to FOREIGN PORTS, also distinguishing British from Foreign Vessels :”
- “ Aggregate RETURN of the NUMBER and TONNAGE of VESSELS Entered and Cleared at each of the Ports of *Great Britain* and *Ireland*, *Isle of Man*, and *Channel Islands* (including their repeated Voyages), in the Coasting, Colonial, and Foreign Trades, in the Year 1865; distinguishing British from Foreign Vessels :”
- “ RETURN of the NUMBER and TONNAGE of SAILING VESSELS Registered at each of the Ports of the Colonies of the United Kingdom respectively, distinguishing those under and those above Fifty Tons Register, on the 31st day of December 1865 :”
- “ Similar RETURN of STEAM VESSELS and their TONNAGE :”
- “ RETURNS of the NUMBER and TONNAGE of NEW VESSELS Built in the United Kingdom, and at each of the British Possessions respectively (distinguishing Timber from Iron and Steam from Sailing Vessels), and Registered as British Ships in the Year 1865 :”
- “ Of the NUMBER of VESSELS, with their TONNAGE (distinguishing Timber from Iron and Steam from Sailing Vessels), that were Registered in the United Kingdom as NEW SHIPS; similar RETURN of VESSELS Sold and Transferred; similar RETURN of VESSELS Wrecked; and, similar RETURN of VESSELS Broken up, in the Year 1865 :”
- “ Of the NUMBER of COLONIAL-BUILT VESSELS, and their TONNAGE, Registered at each of the Ports of the United Kingdom, in the Year 1865; distinguishing the Number and Tonnage of each Colony respectively :”
- “ Similar RETURN of the NUMBER of FOREIGN-BUILT VESSELS and their TONNAGE :”
- “ And, RETURN of the SHIPPING employed in the Trade of the United Kingdom, exhibiting the NUMBER and TONNAGE of VESSELS that Entered Inwards and Cleared Outwards (including their repeated Voyages); separating British from Foreign Vessels, also Steam from Sailing Vessels, and distinguishing the Trade with each Country, in the Year 1865 (in continuation of Parliamentary Paper, No. 331, of Session 1865).”

Board of Trade, }
24 May 1866. }

T. H. FARRER.

(*Mr. Ingham.*)

Ordered, by The House of Commons, to be Printed,
29 May 1866.

RETURN of the NUMBER and TONNAGE of SAILING VESSELS Registered at each of the Ports of *Great Britain and Ireland*, including the *Isle of Man and Channel Islands*, distinguishing those under and those above Fifty Tons Register, on the 31st day of December 1865:—Also, a Similar RETURN of STEAM VESSELS and their TONNAGE.

	SAILING VESSELS				STEAM VESSELS			
	Of and under 50 Tons.		Above 50 Tons.		Of and under 50 Tons.		Above 50 Tons.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
ENGLAND:								
Aberystwith	99	3,429	301	37,344	1	21	5	480
Arundel	36	1,060	46	6,793	1	32	—	—
Barnstaple	57	1,897	32	2,982	1	15	—	—
Beaumaris	131	4,407	161	14,413	—	—	—	—
Berwick	14	477	15	1,535	1	11	—	—
Bideford	54	1,735	80	10,189	—	—	—	—
Boston	81	2,858	51	4,005	1	15	—	—
Bridgwater	74	2,864	56	11,053	5	77	2	191
Bridport	—	—	8	1,229	—	—	—	—
Bristol	169	4,869	170	52,756	22	644	27	3,886
Brixham	10	357	44	6,158	—	—	—	—
Caernarvon	174	5,845	368	38,217	2	33	2	226
Cardiff	31	895	58	16,444	27	508	5	634
Cardigan	106	3,182	64	6,454	—	—	—	—
Carlisle	11	386	14	1,825	1	27	6	1,445
Chepstow	37	1,003	12	946	—	—	—	—
Chester	51	1,802	71	5,192	2	59	6	2,008
Colchester	225	4,268	97	12,351	—	—	—	—
Cowes	148	3,874	61	6,774	4	136	2	208
Dartmouth	127	4,238	188	24,526	6	165	1	130
Deal	7	175	7	770	—	—	—	—
Dover	33	868	23	2,701	1	22	2	134
Exeter	33	896	93	13,598	1	13	—	—
Falmouth	42	1,318	92	14,436	5	150	—	—
Faversham	198	5,731	202	29,577	2	22	—	—
Fleetwood	41	1,233	42	8,524	2	42	4	1,330
Folkestone	6	84	25	3,559	—	—	—	—
Fowey	40	1,421	138	13,944	—	—	—	—
Gainsborough	13	514	2	112	4	123	4	304
Gloucester	269	7,537	67	8,040	5	129	1	64
Goole	214	9,009	308	22,334	6	172	11	2,042
Grimsby	160	5,206	37	2,901	4	63	5	1,749
Hartlepool	5	118	113	27,000	—	—	2	1,416
Ditto, West	8	257	76	16,118	4	55	18	7,551
Harwich	60	1,941	57	6,107	—	—	—	—
Hayle	1	18	19	2,331	—	—	2	461
Hull	344	13,203	136	27,678	14	247	84	38,547
Ipawich	54	1,642	138	14,449	6	262	4	355
Lancaster	33	1,162	143	19,921	3	70	7	1,437
Liverpool	277	9,359	2,364	1,371,792	52	1,628	346	184,885
Llanelly	26	741	62	8,169	6	155	—	—
Lowestoft	165	3,935	57	5,924	4	70	2	569
Lyme	7	251	14	1,725	—	—	—	—
Lynn	57	1,981	86	11,640	—	—	—	—
Maldon	110	3,692	63	7,191	—	—	—	—
Maryport	10	200	116	22,774	4	99	—	—
Middlesborough	10	302	58	10,032	24	557	8	2,421
Milford	74	1,093	51	7,658	1	28	—	—
Newcastle	151	4,122	308	104,138	97	1,897	41	16,332
Newhaven	15	263	17	2,873	—	—	6	1,006
Newport	13	529	98	21,786	2	55	2	324
Padstow	48	1,926	80	11,742	—	—	—	—
Penzance	18	517	78	8,727	1	20	—	—
Plymouth	221	6,515	210	45,598	11	353	1	59
Poole	44	1,308	60	9,278	2	45	—	—
Portsmouth	142	3,569	105	12,134	4	85	5	324
Preston	55	2,097	55	4,859	6	150	1	279
Ramsgate	127	3,682	25	3,709	1	10	—	—
Rochester	573	19,848	80	9,194	6	173	—	—
Runcorn	13	488	35	2,398	—	—	—	—
Rye	44	1,003	51	5,266	1	21	—	—
St. Ives	75	1,383	80	8,457	—	—	1	178
Salcombe	6	198	19	3,992	—	—	—	—
Scarborough	106	3,779	115	33,947	2	60	1	53
Scilly	14	417	32	6,482	—	—	1	67
Shields	19	558	561	163,389	129	2,407	5	1,276
Ditto, South	6	182	301	91,173	25	512	4	983
Shoreham	27	511	125	27,220	1	15	—	—
Southampton	126	3,654	100	13,654	12	364	32	10,855
Stockton	9	223	19	4,985	12	274	4	941
Sunderland	105	3,176	791	218,220	52	730	47	24,563

RETURNS RELATING TO SHIPPING.

3

	SAILING VESSELS				STEAM VESSELS			
	Of and under 50 Tons.		Above 50 Tons.		Of and under 50 Tons.		Above 50 Tons.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
ENGLAND—cont^d.								
Swansea - - -	26	819	117	28,484	13	313	7	1,396
Teignmouth - - -	9	207	65	8,348	1	15	—	—
Truro - - -	14	429	57	6,002	—	—	—	—
Wells - - -	67	1,732	71	9,051	3	37	—	—
Weymouth - - -	23	646	44	4,786	4	77	6	653
Whitby - - -	51	1,801	360	73,068	2	37	1	521
Whitehaven - - -	14	318	161	25,680	2	48	2	320
Wisbeach - - -	11	456	39	6,025	1	23	5	2,310
Woodbridge - - -	31	974	32	2,285	—	—	—	—
Workington - - -	2	51	83	21,704	1	17	—	—
Yarmouth - - -	434	13,122	183	20,605	6	133	3	475
London - - -	770	26,877	1,793	828,698	181	5,238	543	297,671
TOTAL, ENGLAND -	7,388	281,983	12,826	3,790,298	800	18,761	1,274	612,769
SCOTLAND:								
Aberdeen - - -	8	288	237	81,535	5	84	9	3,235
Alloa - - -	17	549	22	9,268	3	55	3	211
Arbroath - - -	6	252	79	12,059	—	—	—	—
Ardrossan - - -	43	1,199	45	10,418	3	77	2	367
Ayr - - -	15	472	35	7,242	—	—	2	337
Banff - - -	22	689	77	10,821	—	—	—	—
Borrowstoness - - -	17	526	33	4,755	2	44	—	—
Campbeltown - - -	30	1,046	6	394	—	—	2	279
Dumfries - - -	53	1,622	53	12,002	—	—	—	—
Dundee - - -	8	246	181	41,793	2	81	18	5,971
Glasgow - - -	162	5,642	386	225,830	47	1,483	220	96,797
Grangemouth - - -	12	357	24	4,416	7	110	7	2,301
Greenock - - -	163	4,781	199	89,683	15	310	12	2,143
Inverness - - -	135	3,149	86	7,900	—	—	—	—
Irvine - - -	11	351	18	5,414	1	15	—	—
Kirkaldy - - -	16	461	27	4,522	3	107	1	86
Kirkwall - - -	30	901	17	1,321	1	26	1	69
Leith - - -	57	1,789	88	25,445	22	482	46	18,958
Lerwick - - -	60	1,799	20	1,358	—	—	—	—
Montrose - - -	11	387	118	18,416	2	40	—	—
Perth - - -	10	240	44	4,697	1	22	1	51
Peterhead - - -	15	437	49	9,403	—	—	—	—
Port Glasgow - - -	26	939	5	1,263	4	100	4	361
Stornoway - - -	35	872	9	1,022	—	—	—	—
Stranraer - - -	31	1,076	12	2,039	—	—	—	—
Troon - - -	2	57	5	1,142	—	—	1	200
Wick - - -	20	614	39	4,445	1	44	—	—
Wigtown - - -	42	1,309	11	1,592	—	—	1	284
TOTAL, SCOTLAND -	1,057	32,050	1,925	600,195	119	3,080	330	181,650
IRELAND:								
Ballina - - -	1	17	—	—	1	37	—	—
Belfast - - -	179	6,005	342	57,960	7	150	5	1,343
Coleraine - - -	4	114	3	301	—	—	—	—
Cork - - -	175	4,370	188	29,572	20	611	21	5,991
Drogheda - - -	4	90	34	3,423	—	—	5	1,579
Dublin - - -	328	9,958	194	27,606	15	405	39	12,338
Dundalk - - -	4	167	21	1,682	—	—	4	1,703
Galway - - -	9	249	4	757	—	—	1	67
Limerick - - -	26	777	18	2,821	—	—	5	1,854
Londonderry - - -	6	175	25	9,146	1	33	5	1,258
Newry - - -	70	2,136	31	4,631	2	25	4	457
Ross - - -	3	61	8	1,934	—	—	—	—
Skibbereen - - -	68	1,657	3	221	—	—	—	—
Sligo - - -	9	264	16	3,485	2	78	2	546
Tralee - - -	13	384	—	—	—	—	—	—
Waterford - - -	50	1,261	82	9,116	2	48	40	26,302
Westport - - -	4	87	1	142	—	—	—	—
Wexford - - -	16	585	80	9,462	2	52	2	594
TOTAL, IRELAND -	969	28,357	1,045	162,259	52	1,439	133	54,032
ISLE OF MAN - - -	272	6,794	50	4,065	—	—	6	1,596
CHANNEL ISLANDS - - -	200	5,560	387	75,215	2	25	2	181

General Register and Record Office of Shipping }
and Seamen, London, 18 May 1886.

John J. Mayo,
Registrar General of Shipping and Seamen.

RETURN of the NUMBER and TONNAGE of VESSELS that Entered and Cleared Coastwise at each of the Ports of *Great Britain and Ireland, Isle of Man, and Channel Islands* (including their repeated Voyages), distinguishing British from Foreign Vessels, and Steam from Sailing Vessels, between the 31st day of December 1864 and the 31st day of December 1865.

SAILING VESSELS.

	INWARDS.				OUTWARDS.			
	BRITISH.		FOREIGN.		BRITISH.		FOREIGN.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
ENGLAND:								
Aberystwith	583	21,945	-	-	324	14,880	—	—
Arundel	476	44,825	-	-	122	7,110	—	—
Barnstaple	1,133	48,904	-	-	194	6,888	—	—
Beaumaris	1,420	67,066	-	-	274	12,288	—	—
Berwick	372	19,076	1	49	191	11,387	—	—
Bideford	743	30,458	-	-	82	3,984	—	—
Boston	610	26,770	-	-	322	16,311	2	172
Bridgwater	3,780	165,185	1	68	988	42,053	—	—
Bridport	98	8,008	-	-	18	972	1	126
Bristol	4,495	182,545	-	-	2,195	98,320	—	—
Caernarvon	1,555	81,922	-	-	186	6,751	1	490
Cardiff	2,385	174,277	16	1,831	6,740	470,577	1	115
Cardigan	493	12,771	-	-	42	1,298	—	—
Carlisle	97	5,206	-	-	324	21,288	—	—
Chepstow	356	12,921	-	-	281	11,296	—	—
Chester	1,468	75,460	-	-	1,128	56,818	—	—
Colchester	630	48,315	1	72	243	11,059	1	83
Cowes	766	54,647	-	-	190	5,578	—	—
Dartmouth	606	35,775	-	-	342	19,783	—	—
Deal	213	14,181	-	-	79	4,600	3	190
Dover	430	42,413	-	-	142	9,887	—	—
Exeter	545	58,354	-	-	133	6,765	1	87
Falmouth	563	36,823	-	-	135	8,182	—	—
Faversham	1,640	129,739	-	-	890	38,813	—	—
Fleetwood	386	30,507	-	-	203	21,026	4	799
Folkestone	287	34,964	-	-	2	309	—	—
Fowey	927	62,562	1	116	472	34,021	—	—
Gainsborough	192	9,198	-	-	298	13,490	—	—
Gloucester	886	42,519	-	-	3,096	124,438	17	1,453
Goole	1,438	75,260	-	-	1,486	78,372	2	278
Grimsby	135	6,525	1	286	244	20,123	71	14,240
Hartlepool	341	28,947	5	336	4,744	600,048	2	123
Harwich	470	36,122	-	-	343	16,012	—	—
Hayle	1,307	126,249	-	-	544	50,187	—	—
Hull	591	42,168	1	42	812	105,870	184	45,184
Ipswich	969	74,875	-	-	757	44,246	11	849
Lancaster	1,147	60,487	-	-	1,907	138,808	—	—
Liverpool	4,337	413,540	32	9,045	4,624	330,581	5	1,298
Llanelly	1,268	77,900	8	682	2,268	163,003	—	—
Lowestoft	658	59,780	-	-	195	11,991	1	211
Lyme	127	7,780	-	-	27	1,167	—	—
Lynn	1,033	87,127	-	-	406	27,230	5	348
Maldon	1,082	74,040	-	-	952	40,702	—	—
Maryport	289	24,337	-	-	3,153	291,271	—	—
Middlesborough	220	16,338	4	719	1,988	157,481	1	99
Milford	734	30,713	-	-	984	39,870	—	—
Newcastle	2,058	189,247	182	32,760	7,872	1,004,427	1	49
Newhaven	358	52,691	-	-	25	2,635	—	—
Newport	2,115	158,592	5	429	7,010	426,342	3	526
Padstow	712	33,195	-	-	231	10,323	—	—
Penzance	752	66,522	-	-	151	10,509	—	—
Plymouth	2,526	219,148	1	88	1,234	83,549	1	128
Poole	552	47,718	3	190	199	9,517	3	166
Portsmouth	1,117	129,622	-	-	586	18,164	—	—
Preston	458	24,716	-	-	489	27,625	—	—
Ramsgate	294	26,778	-	-	65	4,299	—	—
Rochester	3,053	387,505	-	-	1,411	49,479	—	—
Runcorn	1,271	74,902	2	223	2,840	175,006	—	—
Rye	472	37,067	-	-	52	3,317	—	—
Scarborough	391	21,012	-	-	21	1,151	—	—
Scilly	56	2,492	-	-	43	1,587	—	—
Shields	349	39,485	53	14,725	839	76,448	—	—
Ditto, South (3 months)	61	14,428	21	5,846	15	1,124	—	—
Shoreham	608	95,203	-	-	83	4,844	2	143
Southampton	1,507	167,775	8	1,478	613	30,916	1	129
Stockton	280	17,313	2	168	245	16,468	—	—

SAILING VESSELS— <i>continued.</i>								
ENGLAND— <i>contd.</i>	INWARDS.				OUTWARDS.			
	BRITISH.		FOREIGN.		BRITISH.		FOREIGN.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
Sunderland - - -	1,035	83,023	12	1,341	9,104	1,110,408	13	627
Swansea - - -	3,399	256,945	12	979	5,334	404,538	5	901
Teignmouth - - -	615	56,514	-	-	121	7,766	-	-
Truro - - -	750	58,751	-	-	474	40,425	4	292
Wells - - -	502	26,430	-	-	243	12,175	-	-
Weymouth - - -	280	23,206	-	-	25	1,261	1	53
Whitby - - -	534	23,310	-	-	80	4,207	-	-
Whitehaven - - -	669	26,421	-	-	3,955	266,842	6	739
Wisbeach - - -	325	19,540	-	-	175	9,638	1	78
Woodbridge - - -	406	22,695	-	-	273	13,274	-	-
Workington - - -	132	7,825	-	-	1,244	113,413	-	-
Yarmouth - - -	1,224	98,421	2	150	444	28,138	8	617
London - - -	11,115	1,843,589	3	927	6,284	433,362	38	4,267
TOTAL, ENGLAND -	84,157	6,612,214	377	72,554	96,850	7,605,330	400	74,950
SCOTLAND:								
Aberdeen - - -	1,355	142,110	-	-	590	51,822	5	366
Alloa - - -	41	2,943	1	68	73	4,473	3	809
Arbroath - - -	445	32,077	-	-	208	13,770	-	-
Ardrossan - - -	176	14,957	-	-	1,801	153,438	-	-
Ayr - - -	206	12,381	-	-	1,277	86,837	-	-
Banff - - -	390	24,290	1	60	231	13,277	3	270
Borrowstoness - - -	66	3,568	4	279	494	35,966	1	49
Campbeltown - - -	430	17,020	-	-	187	7,719	-	-
Dumfries - - -	609	18,532	-	-	302	11,487	-	-
Dundee - - -	1,575	153,816	21	1,938	296	20,026	1	88
Glasgow - - -	908	101,011	2	585	2,310	153,074	4	1,063
Grangemouth - - -	137	10,209	4	348	139	12,930	-	-
Greenock - - -	789	39,695	-	-	330	23,857	7	2,356
Inverness - - -	1,366	82,223	-	-	1,216	74,491	1	68
Kirkaldy - - -	251	13,615	1	51	904	53,000	4	273
Kirkwall - - -	265	15,069	-	-	208	11,483	-	-
Leith - - -	702	42,857	6	521	614	39,158	1	73
Lerwick - - -	91	6,459	1	141	55	3,782	-	-
Montrose - - -	736	60,670	-	-	479	40,092	3	391
Perth - - -	134	9,096	-	-	161	10,933	-	-
Peterhead - - -	442	24,216	4	253	299	14,936	2	123
Port Glasgow - - -	23	2,403	-	-	16	2,964	-	-
Stornoway - - -	121	5,994	-	-	21	1,025	-	-
Stranraer - - -	458	18,068	-	-	180	7,227	-	-
Troon - - -	113	5,709	2	447	2,719	188,689	-	-
Wick - - -	561	30,837	2	135	231	10,933	3	253
Wigtown - - -	542	17,064	-	-	399	13,078	-	-
TOTAL, SCOTLAND -	12,882	906,909	49	4,826	15,740	1,060,542	38	6,244
IRELAND:								
Ballina - - -	47	3,037	-	-	73	4,894	-	-
Belfast - - -	5,203	446,757	-	-	586	44,285	11	3,140
Coleraine - - -	190	10,949	-	-	23	997	-	-
Cork - - -	1,618	159,807	-	-	1,047	76,120	-	-
Drogheda - - -	487	40,886	-	-	124	9,399	1	153
Dublin - - -	5,548	516,530	-	-	2,139	133,714	17	3,133
Dundalk - - -	648	48,609	-	-	92	6,335	1	144
Galway - - -	77	7,411	-	-	47	6,176	0	1,733
Limerick - - -	182	17,174	-	-	164	14,960	2	205
Londonderry - - -	665	55,287	1	99	216	16,889	6	658
Newry - - -	1,063	69,883	-	-	238	17,145	13	1,626
Ross - - -	265	20,062	-	-	67	4,988	-	-
Skibbereen - - -	207	11,596	-	-	127	8,802	-	-
Sligo - - -	167	10,327	-	-	107	5,642	3	462
Strangford (5 months)	180	9,800	-	-	115	5,604	-	-
Tralee - - -	116	7,577	-	-	55	3,112	-	-
Waterford - - -	1,018	86,408	2	226	572	41,577	4	935
Westport - - -	52	3,778	-	-	64	4,454	-	-
Wexford - - -	645	40,291	-	-	302	17,666	-	-
TOTAL, IRELAND -	18,378	1,566,250	3	325	6,158	422,754	64	12,189
ISLE OF MAN -	1,212	44,870	-	-	567	21,690	-	-
CHANNEL ISLANDS -	-	-	-	-	-	-	-	-

STEAM VESSELS.

	INWARDS.				OUTWARDS.			
	BRITISH.		FOREIGN.		BRITISH.		FOREIGN.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
ENGLAND:								
Aberystwith	94	8,802	-	-	49	4,698	-	-
Arundel	9	311	-	-	25	400	-	-
Barnstaple	218	18,890	-	-	218	18,890	-	-
Beaumaris	656	286,964	-	-	512	234,000	-	-
Berwick	-	-	-	-	-	-	-	-
Bideford	101	7,247	-	-	101	7,247	-	-
Boston	38	3,360	-	-	36	3,159	-	-
Bridgwater	408	37,259	-	-	409	37,442	-	-
Bridport	-	-	-	-	-	-	-	-
Bristol	2,066	322,600	-	-	1,934	306,168	-	-
Caernarvon	126	20,902	-	-	6	889	-	-
Cardiff	447	61,810	-	-	1,037	192,031	-	-
Cardigan	-	-	-	-	-	-	-	-
Carlisle	426	89,139	-	-	443	91,102	-	-
Chepstow	-	-	-	-	-	-	-	-
Chester	153	8,765	-	-	138	7,653	-	-
Colchester	-	-	-	-	-	-	-	-
Cowes	-	-	-	-	-	-	-	-
Dartmouth	77	3,311	-	-	79	3,397	-	-
Deal	-	-	-	-	-	-	-	-
Dover	-	-	-	-	-	-	-	-
Exeter	-	-	-	-	-	-	-	-
Falmouth	105	42,357	-	-	-	-	-	-
Faversham	-	-	-	-	-	-	-	-
Fleetwood	416	133,694	-	-	416	133,988	-	-
Folkestone	-	-	-	-	-	-	-	-
Fowey	15	4,499	-	-	-	-	-	-
Gainsborough	-	-	-	-	-	-	-	-
Gloucester	42	2,412	-	-	49	2,963	-	-
Goole	135	22,763	-	-	149	24,179	-	-
Grimsby	-	-	-	-	1	360	-	-
Hartlepool	31	4,237	-	-	125	33,015	-	-
Harwich	-	-	-	-	-	-	-	-
Hayle	115	23,478	-	-	101	19,628	-	-
Hull	559	101,373	-	-	594	112,191	-	-
Ipswich	20	3,881	-	-	18	3,400	-	-
Lancaster	352	85,993	-	-	432	108,463	-	-
Liverpool	3,411	1,167,041	-	-	3,231	1,046,999	-	-
Llanelly	108	9,722	-	-	110	9,758	-	-
Lowestoft	18	4,758	-	-	2	154	-	-
Lyme	-	-	-	-	-	-	-	-
Lynn	148	15,564	-	-	149	15,768	-	-
Maldon	-	-	-	-	-	-	-	-
Maryport	2	118	-	-	3	177	-	-
Middlesborough	75	28,145	-	-	190	46,268	-	-
Milford	533	170,285	-	-	363	102,967	-	-
Newcastle	667	190,183	-	-	1,930	866,237	1	434
Newhaven	-	-	-	-	-	-	-	-
Newport	441	52,272	-	-	258	43,973	-	-
Padstow	37	3,520	-	-	37	3,520	-	-
Penzance	210	35,736	-	-	127	8,769	-	-
Plymouth	506	202,739	-	-	413	165,851	-	-
Poole	2	348	-	-	-	-	-	-
Portsmouth	6	2,970	-	-	18	7,725	-	-
Preston	1	128	-	-	1	128	-	-
Ramsgate	-	-	-	-	-	-	-	-
Rochester	9	2,100	-	-	-	-	-	-
Runcorn	1	59	-	-	1	175	-	-
Rye	-	-	-	-	-	-	-	-
Scarborough	-	-	-	-	-	-	-	-
Scilly	121	8,013	-	-	123	8,118	-	-
Shields	47	18,795	-	-	107	44,043	-	-
Ditto, South (3 months)	3	574	-	-	17	7,173	-	-
Shoreham	3	545	-	-	-	-	-	-
Southampton	169	67,909	-	-	4	427	-	-
Stockton	56	16,559	-	-	54	16,611	-	-
Sunderland	55	21,477	-	-	813	352,956	-	-
Swansea	458	79,404	-	-	472	84,805	-	-
Teignmouth	1	370	-	-	-	-	-	-
Truro	51	12,291	-	-	25	3,647	-	-
Wells	-	-	-	-	-	-	-	-
Weymouth	-	-	-	-	2	313	-	-

STEAM VESSELS—continued.

	STEAM VESSELS—continued.							
	INWARDS.				OUTWARDS.			
	BRITISH.		FOREIGN.		BRITISH.		FOREIGN.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
ENGLAND—contd.								
Whitby - - -	42	847	- - -	- - -	29	527	—	—
Whitehaven - -	249	44,429	- - -	- - -	375	88,767	—	—
Wisbeach - - -	68	5,634	- - -	- - -	68	5,623	—	—
Woodbridge - - -	—	—	—	—	—	—	—	—
Workington - -	13	636	- - -	- - -	8	545	—	—
Yarmouth - - -	205	41,750	- - -	- - -	203	42,203	—	—
London - - -	3,805	1,720,864	- - -	- - -	1,713	684,235	—	—
TOTAL, ENGLAND -	18,130	5,209,837	- - -	- - -	17,718	5,003,730	1	434
SCOTLAND:								
Aberdeen - - -	423	145,433	- - -	- - -	431	148,644	—	—
Alloa - - -	—	—	—	—	—	—	—	—
Arbroath - - -	—	—	—	—	—	—	—	—
Ardrossan - - -	270	60,784	- - -	- - -	327	71,258	—	—
Ayr - - -	64	9,766	- - -	- - -	59	9,119	—	—
Banff - - -	—	—	—	—	—	—	—	—
Borrowstoness -	—	—	—	—	—	—	—	—
Campbeltown - -	236	32,959	- - -	- - -	247	34,334	—	—
Dumfries - - -	151	23,442	- - -	- - -	144	23,299	—	—
Dundee - - -	203	74,245	- - -	- - -	208	75,759	—	—
Glasgow - - -	1,759	526,453	- - -	- - -	1,885	567,032	—	—
Grangemouth - -	179	53,964	- - -	- - -	176	53,397	—	—
Greenock - - -	772	135,022	- - -	- - -	494	65,746	—	—
Inverness - - -	355	51,028	- - -	- - -	340	49,529	—	—
Kirkaldy - - -	145	12,328	- - -	- - -	144	12,296	—	—
Kirkwall - - -	225	21,646	- - -	- - -	233	22,589	—	—
Leith - - -	475	196,212	- - -	- - -	470	200,361	—	—
Lerwick - - -	49	17,246	- - -	- - -	49	17,246	—	—
Montrose - - -	2	322	- - -	- - -	1	161	—	—
Perth - - -	—	—	—	—	—	—	—	—
Peterhead - - -	4	272	- - -	- - -	1	68	—	—
Port Glasgow - -	1	25	- - -	- - -	3	518	—	—
Stornoway - - -	89	22,143	- - -	- - -	88	22,291	—	—
Stranraer - - -	133	27,973	- - -	- - -	127	26,735	—	—
Troon - - -	2	310	- - -	- - -	167	30,565	—	—
Wick - - -	309	45,264	- - -	- - -	336	52,548	—	—
Wigtown - - -	43	12,683	- - -	- - -	56	15,628	—	—
TOTAL, SCOTLAND -	5,891	1,478,520	- - -	- - -	6,006	1,499,123	—	—
IRELAND:								
Ballina - - -	53	5,937	- - -	- - -	32	4,414	—	—
Belfast - - -	1,930	629,508	- - -	- - -	1,777	601,740	—	—
Coleraine - - -	241	52,342	- - -	- - -	155	33,586	—	—
Cork - - -	451	209,067	- - -	- - -	440	204,544	—	—
Drogheda - - -	256	79,169	- - -	- - -	238	88,829	—	—
Dublin - - -	1,730	681,041	- - -	- - -	2,068	817,851	—	—
Dundalk - - -	302	88,927	- - -	- - -	208	86,593	—	—
Galway - - -	2	382	- - -	- - -	2	382	—	—
Limerick - - -	93	36,914	- - -	- - -	93	36,914	—	—
Londonderry - -	516	135,665	- - -	- - -	439	123,863	—	—
Newry - - -	307	66,077	- - -	- - -	273	63,898	—	—
Ross - - -	323	27,132	- - -	- - -	323	27,132	—	—
Skibbereen - - -	—	—	—	—	—	—	—	—
Sligo - - -	197	48,739	- - -	- - -	207	48,231	—	—
Strangford (5 months)	—	—	—	—	—	—	—	—
Tralee - - -	44	19,177	—	—	—	—	—	—
Waterford - - -	756	277,598	- - -	- - -	703	253,381	—	—
Westport - - -	15	2,879	- - -	- - -	14	2,686	—	—
Wexford - - -	104	26,356	- - -	- - -	104	26,448	—	—
TOTAL, IRELAND -	7,220	2,361,910	- - -	- - -	7,126	2,420,292	—	—
ISLE OF MAN -	304	73,774	- - -	- - -	241	57,477	—	—
CHANNEL ISLANDS -	—	—	—	—	—	—	—	—

General Register and Record Office of Shipping and Seamen,
London, 18 May 1866.

John J. Mayo,
Registrar General of Shipping and Seamen.

RETURN of the NUMBER and TONNAGE of VESSELS that Entered and Cleared from and to the COLONIES, at each of the Ports of Great Britain and Ireland, Isle of Man, and Channel Islands (including their repeated Voyages), distinguishing Steam from Sailing Vessels, between the 31st day of December 1864 and the 31st day of December 1865; further distinguishing British from Foreign Vessels.

ENGLAND:	SAILING VESSELS.							
	INWARDS.				OUTWARDS.			
	BRITISH.		FOREIGN.		BRITISH.		FOREIGN.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
Aberystwith	16	4,262	-	-	13	3,335	-	-
Arundel	-	-	-	-	-	-	-	-
Barnstaple	7	1,414	1	358	-	-	-	-
Beaumaris	10	4,247	-	-	7	2,633	-	-
Berwick	2	855	-	-	-	-	-	-
Bideford	10	4,017	-	-	4	2,627	-	-
Boston	-	-	-	-	-	-	-	-
Bridgwater	10	3,744	-	-	7	1,348	-	-
Bridport	-	-	-	-	2	224	-	-
Bristol	145	58,128	14	8,482	65	17,667	3	1,448
Caernarvon	19	6,401	2	858	19	3,853	-	-
Cardiff	133	39,184	17	7,102	318	119,868	106	49,302
Cardigan	2	411	-	-	-	-	-	-
Carlisle	5	2,956	5	2,814	6	2,328	3	1,653
Chepstow	-	-	-	-	-	-	-	-
Chester	1	812	-	-	-	-	2	623
Colchester	-	-	-	-	-	-	-	-
Cowes	18	738	-	-	24	1,608	-	-
Dartmouth	10	2,114	-	-	14	2,696	-	-
Deal	-	-	-	-	-	-	-	-
Devor	4	690	-	-	-	-	-	-
Exeter	5	1,231	1	238	4	1,331	1	61
Falmouth	9	2,117	-	-	10	2,444	1	344
Faversham	4	222	-	-	-	-	-	-
Fleetwood	19	11,350	2	860	4	2,774	-	-
Folkestone	4	890	-	-	-	-	-	-
Fowey	10	1,740	4	827	12	1,813	-	-
Gainsborough	-	-	-	-	-	-	-	-
Gloucester	55	28,212	7	3,839	17	4,318	1	406
Goole	-	-	-	-	-	-	-	-
Grimsby	8	4,718	5	2,563	6	3,700	-	-
Hartlepool	20	6,963	8	2,709	26	3,293	1	394
Harwich	-	-	-	-	4	244	-	-
Hayle	6	1,661	-	-	4	1,414	-	-
Hull	50	32,494	29	13,944	37	16,411	3	1,143
Ipswich	1	97	1	772	-	-	-	-
Lancaster	30	10,597	2	668	12	6,253	1	444
Liverpool	902	671,919	68	57,439	964	690,386	50	25,554
Llanelly	24	4,544	3	193	14	3,840	-	-
Lowestoft	10	847	-	-	-	-	-	-
Lyme	2	78	-	-	8	498	-	-
Lynn	-	-	-	-	-	-	-	-
Maldon	1	41	-	-	-	-	-	-
Maryport	8	2,526	-	-	14	3,998	-	-
Middlesborough	3	673	3	205	3	297	-	-
Milford	7	3,041	2	1,396	1	323	-	-
Newcastle	91	22,762	8	1,534	354	87,050	23	8,812
Newhaven	1	40	-	-	8	223	-	-
Newport	37	8,733	3	2,226	93	31,528	35	19,992
Padstow	6	2,016	-	-	3	827	-	-
Penzance	4	884	-	-	4	798	-	-
Plymouth	137	26,113	-	-	170	27,107	5	545
Poole	11	867	-	-	38	4,353	-	-
Portsmouth	39	5,526	1	46	12	1,765	-	-
Preston	2	396	-	-	1	284	-	-
Ramsgate	4	215	-	-	-	-	-	-
Rochester	5	1,036	1	1,012	-	-	-	-
Runcorn	4	182	-	-	4	654	-	-
Rye	-	-	-	-	1	53	-	-
Scarborough	-	-	-	-	-	-	-	-
Scilly	-	-	-	-	-	-	-	-
Shields	12	8,228	2	1,187	33	18,871	1	417
Ditto, South (three months)	2	1,495	-	-	2	872	-	-
Shoreham	14	853	2	653	-	-	-	-
Southampton	34	4,420	2	728	26	3,290	-	-
Stockton	5	2,023	2	604	-	-	-	-
Sunderland	50	20,577	12	6,460	174	84,602	24	15,120
Swansea	122	27,631	10	4,239	114	26,981	24	6,617
Teignmouth	34	3,226	-	-	22	2,250	-	-
Truro	6	2,770	1	416	-	-	2	998
Wells	-	-	-	-	-	-	-	-
Weymouth	8	259	1	280	13	420	-	-
Whitby	1	230	-	-	-	-	-	-
Whitehaven	11	3,176	-	-	4	1,300	-	-
Wisbeach	-	-	2	701	-	-	-	-
Woodbridge	-	-	-	-	-	-	-	-
Workington	6	1,313	-	-	3	704	-	-
Yarmouth	4	1,069	-	-	-	-	-	-
London	2,061	917,729	205	118,039	1,165	719,147	42	21,712
TOTAL, ENGLAND	4,281	1,970,223	426	243,301	3,863	1,914,553	328	155,585

SAILING VESSELS—continued.								
	INWARDS.				OUTWARDS.			
	BRITISH.		FOREIGN.		BRITISH.		FOREIGN.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
SCOTLAND:								
Aberdeen	26	11,347	-	-	16	8,845	-	-
Alloa	-	-	-	-	2	1,030	1	162
Arbroath	-	-	-	-	-	-	-	-
Ardrossan	5	2,355	-	-	31	19,750	1	523
Ayr	1	432	-	-	-	-	-	-
Banff	-	-	-	-	-	-	-	-
Borrowstoness	-	-	-	-	-	-	1	88
Campbeltown	-	-	-	-	-	-	-	-
Dumfries	8	1,929	-	-	3	737	-	-
Dundee	28	18,142	5	1,919	9	6,160	-	-
Glasgow	87	31,710	2	1,007	212	130,473	7	1,976
Grangemouth	11	6,828	1	480	9	5,022	-	-
Greenock	167	103,883	13	7,400	131	78,336	4	2,840
Inverness	2	704	-	-	1	204	-	-
Kirkcaldy	2	347	-	-	-	-	-	-
Kirkwall	-	-	-	-	2	947	-	-
Leith	30	18,635	2	1,004	23	12,639	1	781
Lerwick	-	-	-	-	-	-	-	-
Montrose	8	3,568	-	-	4	1,413	1	101
Perth	-	-	-	-	-	-	-	-
Peterhead	1	272	-	-	-	-	-	-
Port Glasgow	31	23,273	2	417	24	19,617	-	-
Stornoway	-	-	-	-	-	-	-	-
Stranraer	3	1,369	1	451	1	427	-	-
Troon	14	6,909	-	-	45	17,606	7	2,916
Wick	5	499	-	-	-	-	-	-
Wigtown	2	758	-	-	-	-	-	-
TOTAL, SCOTLAND	431	227,960	26	12,678	513	303,206	23	9,390
IRELAND:								
Ballina	1	269	-	-	-	-	-	-
Belfast	46	24,757	4	1,803	25	16,233	1	277
Coleraine	1	384	-	-	1	384	-	-
Cork	46	14,487	2	820	36	12,229	4	1,040
Drogheda	2	456	-	-	-	-	-	-
Dublin	52	29,233	4	1,649	19	13,623	2	1,153
Dundalk	6	1,413	-	-	1	343	-	-
Galway	5	1,558	-	-	6	2,939	-	-
Limerick	18	8,787	1	925	17	8,455	2	1,484
Londonderry	12	7,883	-	-	6	4,476	-	-
Newry	23	13,866	1	765	6	4,930	-	-
Ross	3	1,394	-	-	5	2,290	-	-
Skibbereen	3	2,142	-	-	-	-	-	-
Sligo	6	1,964	-	-	5	1,880	-	-
Strangford (five months)	-	-	-	-	-	-	-	-
Tralee	4	1,424	1	485	2	1,026	-	-
Waterford	23	6,012	1	273	14	4,427	2	1,113
Westport	-	-	-	-	-	-	-	-
Wexford	3	875	-	-	-	-	-	-
TOTAL, IRELAND	254	116,904	14	6,720	142	73,235	11	5,697
ISLE OF MAN	8	2,164	-	-	1	202	-	-
CHANNEL ISLANDS	23	3,514	-	-	57	7,852	-	-
STEAM VESSELS.								
Arundel	109	17,067	-	-	91	14,050	-	-
Cardiff	1	918	-	-	23	24,296	-	-
Dartmouth	22	2,838	-	-	4	516	-	-
Grimsby	-	-	-	-	-	-	1	642
Hull	-	-	-	-	1	891	-	-
Liverpool	85	86,141	1	269	86	100,061	-	-
Newcastle	-	-	-	-	3	289	-	-
Newport	-	-	-	-	2	745	-	-
Plymouth	1	129	-	-	18	2,322	-	-
Rochester	-	-	-	-	1	13,343	-	-
Shields	-	-	-	-	2	1,015	-	-
Southampton	237	65,243	-	-	270	75,170	-	-
Swansea	-	-	-	-	1	177	-	-
Weymouth	137	20,001	-	-	136	19,821	-	-
Yarmouth	-	-	-	-	1	643	-	-
London	99	64,905	1	240	77	45,590	-	-
Glasgow	17	17,905	-	-	38	26,066	1	390
Greenock	4	1,250	-	-	5	2,473	-	-
Port Glasgow	-	-	-	-	4	1,004	-	-
TOTAL	712	276,397	2	509	768	328,472	2	1,032
ISLE OF MAN	-	-	-	-	-	-	-	-
CHANNEL ISLANDS	-	-	-	-	-	-	-	-

RETURN of the NUMBER and TONNAGE of VESSELS that entered and cleared from and to FOREIGN PORTS, at each of the Ports of *Great Britain and Ireland, Isle of Man, and Channel Islands* (including their repeated Voyages), distinguishing Steam from Sailing Vessels, and British from Foreign Vessels, between the 31st day of December 1864 and the 31st day of December 1865.

SAILING VESSELS.

	INWARDS.				OUTWARDS.			
	BRITISH.		FOREIGN.		BRITISH.		FOREIGN.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
ENGLAND :								
Aberystwith	12	1,366	11	2,935	1	99	4	968
Arundel	12	1,935	23	2,586	3	552	10	1,315
Barnstaple	7	1,051	5	861	—	—	—	—
Beaumaris	14	1,336	16	1,539	9	844	1	160
Berwick	15	2,703	43	6,239	3	493	15	2,914
Bideford	5	562	—	—	1	551	—	—
Boston	17	2,098	29	3,834	2	136	14	1,938
Bridgwater	17	3,142	34	4,649	2	127	8	624
Bridport	11	1,715	10	1,280	4	663	9	1,154
Bristol	335	67,830	348	85,806	65	18,916	58	20,570
Carnarvon	28	3,048	7	1,237	211	21,518	4	1,085
Cardiff	282	68,510	930	241,153	1,236	328,004	1,893	466,784
Cardigan	—	—	—	—	—	—	—	—
Carlisle	—	—	6	1,920	3	1,653	4	2,685
Chepstow	2	180	1	83	—	—	—	—
Chester	2	194	6	1,450	2	272	—	—
Colchester	21	2,008	39	3,591	11	644	24	2,204
Cowes	11	629	10	1,147	19	1,221	22	1,777
Dartmouth	20	2,495	16	2,497	33	3,521	3	531
Deal	6	551	37	2,969	—	—	24	2,016
Dover	56	8,180	114	11,547	34	1,376	56	3,568
Exeter	38	4,992	43	6,326	5	1,120	19	3,310
Falmouth	150	9,634	125	8,671	146	10,487	36	2,620
Faversham	37	1,581	4	469	40	2,349	5	509
Fleetwood	6	859	6	1,192	1	764	3	1,003
Folkestone	6	733	10	1,098	3	304	4	394
Fowey	46	3,860	49	5,373	213	17,866	149	12,984
Gainsborough	6	920	5	458	4	252	3	306
Gloucester	179	35,852	412	74,428	10	1,886	76	17,324
Goole	75	6,447	43	4,045	11	943	22	2,150
Grimsby	296	47,332	527	95,299	188	29,965	463	91,141
Hartlepool	754	143,013	1,045	130,772	820	162,969	1,442	172,717
Harwich	64	7,633	44	4,572	8	1,160	41	2,717
Hayle	13	1,234	42	4,620	12	1,288	12	1,976
Hull	537	102,719	1,177	212,702	187	34,833	928	157,083
Ipswich	99	12,995	163	20,014	27	2,222	120	13,076
Lancaster	37	3,659	21	3,785	9	1,474	4	806
Liverpool	1,702	520,465	1,034	353,698	1,502	623,382	970	380,347
Llanelli	301	41,228	325	25,632	398	50,903	412	30,784
Lowestoft	105	16,405	130	22,090	41	2,939	45	9,732
Lyme	—	—	2	106	1	46	—	—
Lynn	104	13,899	123	11,616	11	1,836	27	2,715
Maldon	31	1,355	31	3,087	23	1,001	15	2,033
Maryport	6	1,587	4	412	8	1,461	2	497
Middlesborough	403	54,250	442	43,056	536	78,362	681	70,345
Milford	10	1,785	5	1,210	5	658	3	1,324
Newcastle	1,807	351,555	2,220	372,007	3,151	744,082	3,968	724,136
Newhaven	62	2,979	51	2,649	40	1,447	43	2,216
Newport	146	27,503	226	51,683	429	94,123	328	87,330
Padstow	7	462	13	2,131	6	399	2	418
Penzance	41	2,935	84	7,162	22	1,167	36	3,701
Plymouth	249	23,084	282	31,889	39	5,769	101	14,213
Poole	58	4,001	65	8,282	22	2,468	54	8,452
Portsmouth	83	4,225	137	17,738	10	2,081	105	13,922
Preston	10	835	10	853	7	501	7	571
Ramsgate	6	971	11	1,261	1	149	—	—
Rochester	78	5,040	105	13,029	94	4,343	103	12,237
Runcorn	258	26,273	27	3,605	177	20,679	73	8,256
Rye	16	1,308	28	3,522	1	71	15	2,540
Scarborough	8	875	12	864	4	192	4	163
Scilly	2	154	2	224	2	189	—	—
Shields	621	126,970	406	53,553	714	130,428	291	32,844
Ditto, South (3 months)	59	14,539	59	12,873	2	485	1	266
Shoreham	67	5,380	304	19,591	41	3,037	270	15,678
Southampton	64	7,222	417	31,280	6	541	389	26,836
Stockton	41	7,167	106	12,347	3	262	14	1,842
Sunderland	1,081	204,306	979	146,498	1,593	360,184	1,300	205,990
Swansea	356	89,949	892	108,220	935	173,829	1,234	175,269

SAILING VESSELS—continued.								
	INWARDS.				OUTWARDS.			
	BRITISH.		FOREIGN.		BRITISH.		FOREIGN.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
ENGLAND—contd.								
Teigamouth - - -	9	1,005	19	2,626	15	1,559	22	2,567
Truro - - -	18	3,657	48	12,099	10	560	30	8,185
Wells - - -	41	3,279	30	1,824	1	66	1	55
Weymouth - - -	84	5,530	28	3,944	2	52	18	2,976
Whitby - - -	39	5,324	1	21	11	2,946	—	—
Whitehaven - - -	4	460	12	1,689	44	4,199	8	1,130
Wisbeach - - -	112	18,615	100	16,146	4	932	51	10,580
Woodbridge - - -	4	375	9	735	—	—	7	641
Workington - - -	—	—	—	—	36	3,638	1	101
Yarmouth - - -	171	23,571	114	14,564	38	3,845	74	8,087
London - - -	2,781	624,902	3,498	826,796	1,372	251,160	3,015	750,747
TOTAL, ENGLAND -	14,261	2,798,467	17,842	3,193,709	14,735	3,221,508	19,196	3,610,160
SCOTLAND:								
Aberdeen - - -	132	19,699	169	24,005	57	9,953	44	7,290
Alloa - - -	25	5,582	113	14,161	60	10,163	364	40,605
Arbroath - - -	47	7,706	28	3,741	21	4,060	3	553
Ardrossan - - -	17	3,956	1	137	213	45,608	149	24,246
Ayr - - -	6	787	11	1,143	4	321	10	1,057
Banff - - -	22	1,776	52	3,610	40	2,971	30	1,857
Borrowstoness - - -	58	7,782	166	16,703	301	41,460	705	70,877
Campbeltown - - -	2	187	19	1,860	—	—	—	—
Dumfries - - -	3	501	3	492	—	—	2	350
Dundee - - -	272	52,660	250	40,066	147	31,255	195	32,463
Glasgow - - -	256	57,526	155	38,093	298	78,007	153	41,042
Grangemouth - - -	57	9,049	392	50,054	106	15,949	468	68,366
Greenock - - -	190	51,940	105	27,682	56	21,941	34	9,964
Inverness - - -	31	5,373	61	5,427	52	4,563	58	4,708
Kirkcaldy - - -	90	13,780	203	18,506	191	25,464	593	55,011
Kirkwall - - -	9	609	8	522	8	501	7	904
Leith - - -	372	56,455	990	123,455	76	15,670	200	33,510
Lerwick - - -	4	629	27	1,876	8	922	26	1,843
Montrose - - -	70	10,738	165	31,937	54	9,606	161	31,783
Perth - - -	9	1,149	25	2,525	1	197	5	687
Peterhead - - -	47	7,237	63	4,057	117	13,395	60	3,970
Port Glasgow - - -	15	5,815	11	3,753	3	1,124	4	1,357
Stornoway - - -	13	846	2	156	91	4,736	1	82
Stranraer - - -	—	—	2	405	—	—	—	—
Troon - - -	2	899	10	1,798	83	27,150	161	38,320
Wick - - -	21	1,466	78	4,127	113	8,840	86	4,850
Wigtown - - -	—	—	—	—	—	—	—	—
TOTAL, SCOTLAND -	1,770	324,147	3,109	420,381	2,106	374,056	3,514	475,695
IRELAND:								
Ballina - - -	—	—	—	—	—	—	—	—
Belfast - - -	126	19,181	191	33,293	15	3,430	22	5,303
Coleraine - - -	2	235	2	363	—	—	—	—
Cork - - -	70	19,116	154	54,493	9	2,920	14	4,437
Drogheda - - -	4	702	5	719	1	228	1	219
Dublin - - -	172	26,990	199	51,118	47	10,094	54	14,500
Dundalk - - -	3	481	9	1,429	—	—	—	—
Galway - - -	15	8,604	25	8,600	—	—	3	1,591
Limerick - - -	29	9,743	60	19,360	—	—	6	1,852
Londonderry - - -	46	15,465	59	15,249	10	8,329	2	811
Newry - - -	23	3,748	44	6,045	1	602	2	948
Ross - - -	6	1,979	15	4,186	2	411	—	—
Shibbereen - - -	1	193	3	790	—	—	—	—
Sligo - - -	4	1,162	26	7,562	—	—	3	1,540
Strangford (five months) - - -	—	—	—	—	—	—	—	—
Tralee - - -	4	1,142	15	4,249	—	—	1	485
Waterford - - -	75	21,761	78	25,715	—	—	4	1,428
Westport - - -	3	610	5	1,105	—	—	—	—
Wexford - - -	19	3,669	—	—	1	184	—	—
TOTAL, IRELAND -	602	134,781	890	234,276	86	25,498	112	33,114
ISLE OF MAN -	9	1,003	27	3,348	4	636	22	2,687
CHANNEL ISLANDS -	1,094	54,566	338	25,202	1,087	37,758	333	20,894

	STEAM VESSELS.								and C essels FORE sels. ons. 988 1,315 160 2,914 - 2,110 624 1,280 22,018 1,575 16,201 - 4,338 - 623 2,287 1,777 531 2,206 3,568 3,458 2,964 509 1,807 394 12,984 306 19,183 2,428 05,381 73,234 2,717 1,976 03,410 13,925 1,250 07,199 30,784 9,943 - 3,063 2,033 497 70,444 1,324 32,997 2,216 07,848 418 3,701 14,880 8,610 13,923 57 - 8,250 2,540 16 - 33,26 26 15,82 26,96 1,84 221,73 182,87 2,56 9,47 5
	INWARDS.				OUTWARDS.				
	BRITISH.		FOREIGN.		BRITISH.		FOREIGN.		
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	
Aberystwith	-	-	-	-	1	50	-	-	-
Arundel	137	18,728	17	2,518	157	22,250	17	2,518	-
Bridgwater	-	-	1	79	-	-	-	-	988
Bristol	38	10,412	17	3,127	19	4,093	17	3,127	1,315
Cardiff	162	70,575	20	6,065	252	132,377	39	10,436	-
Cowes	-	-	-	-	-	-	1	1,275	160
Dover	371	66,328	634	89,981	25	3,354	445	53,655	2,914
Falmouth	-	-	-	-	-	-	1	109	-
Folkestone	789	131,640	-	-	776	129,447	-	-	2,110
Gloucester	9	2,154	1	108	3	718	-	-	624
Goole	289	60,175	-	-	295	61,336	2	165	1,280
Grimsby	153	56,796	53	25,775	152	58,088	54	26,211	22,018
Hartlepool	304	105,781	5	1,621	317	114,566	6	2,430	1,575
Harwich	258	122,439	-	-	262	123,450	-	-	16,201
Hayle	-	-	-	-	1	684	-	-	-
Hull	1,083	410,533	179	70,194	1,068	396,362	172	66,861	4,338
Ipswich	1	215	-	-	-	-	-	-	-
Liverpool	962	917,887	73	37,013	783	775,047	70	37,100	623
Llanelly	1	191	-	-	4	681	-	-	2,287
Lowestoft	6	1,292	-	-	3	255	-	-	1,777
Middlesborough	50	12,050	-	-	77	23,209	-	-	531
Milford	1	193	-	-	3	579	-	-	2,206
Newcastle	416	165,600	4	1,861	500	212,598	13	2,871	3,568
Newhaven	569	99,290	-	-	561	98,265	-	-	3,458
Newport	28	10,754	3	774	40	19,629	-	-	2,964
Plymouth	7	2,410	16	2,954	1	274	-	-	509
Poole	70	11,200	-	-	70	11,200	-	-	1,807
Runcorn	5	993	-	-	3	586	-	-	394
Shields	30	12,680	1	149	35	13,847	3	722	12,984
Ditto, South (3 months)	3	1,484	-	-	1	598	-	-	306
Shoreham	-	-	-	-	1	85	-	-	19,183
Southampton	658	221,581	46	81,885	618	216,919	45	81,520	2,428
Stockton	-	-	-	-	2	1,032	-	-	05,381
Sunderland	179	82,649	45	17,326	218	104,549	47	18,003	73,234
Swansea	76	19,594	-	-	123	34,115	3	653	2,717
Weymouth	2	163	-	-	2	163	-	-	1,976
Whitby	1	375	-	-	-	-	-	-	03,410
Whitehaven	-	-	-	-	11	4,819	-	-	13,925
Wisbeach	2	926	-	-	-	-	-	-	1,250
Workington	-	-	-	-	1	488	-	-	07,199
Yarmouth	1	241	-	-	-	-	-	-	30,784
London	2,372	875,193	593	218,338	1,840	630,462	562	208,991	9,943
Alloa	-	-	-	-	2	902	-	-	-
Ardrossan	-	-	-	-	12	2,999	-	-	3,063
Borrowstoness	-	-	-	-	-	-	1	23	2,033
Dundee	35	10,835	4	1,302	17	5,982	1	156	497
Glasgow	41	29,249	1	47	177	78,929	16	4,180	70,444
Grangemouth	65	22,444	35	9,031	99	33,613	39	10,392	1,324
Greenock	21	6,770	-	-	2	499	9	7,609	32,997
Inverness	-	-	-	-	1	33	-	-	2,216
Kirkaldy	-	-	-	-	1	215	-	-	07,848
Leith	388	167,729	42	12,853	399	171,145	41	12,702	418
Lerwick	-	-	1	254	-	-	2	524	3,701
Port Glasgow	-	-	-	-	3	435	3	646	14,880
Stornoway	-	-	-	-	1	283	-	-	8,610
Belfast	1	267	-	-	2	853	-	-	13,923
Cork	6	2,946	-	-	3	970	-	-	57
Dublin	94	32,119	1	125	5	1,599	1	125	-
Limerick	-	-	-	-	1	284	-	-	12,237
Ross	1	672	-	-	-	-	-	-	8,250
Wexford	-	-	-	-	1	179	-	-	2,540
TOTAL	9,675	3,765,553	1,792	582,880	8,951	3,494,995	1,610	553,004	16
ISLE OF MAN	-	-	-	-	-	-	-	-	33,26
CHANNEL ISLANDS	319	39,196	65	2,994	347	38,463	65	2,994	26

General Register and Record Office of Shipping and Seamen, }
London, 18 May 1866.

John J. Mayo,
Registrar-General of Shipping and Seamen.

and Channel Islands (including their Repeated Voyages), in the Coasting, Colonial, and Foreign Trades, Vessels.

FOREIGN.			TOTAL INWARDS.				TOTAL OUTWARDS.			
			BRITISH.		FOREIGN.		BRITISH.		FOREIGN.	
Vessels.	Steam Vessels.		Sailing and Steam Vessels.		Sailing and Steam Vessels.		Sailing and Steam Vessels.		Sailing and Steam Vessels.	
Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
Aberdeen 988	-	-	655	36,395	11	2,935	388	23,062	4	988
Arundel 1,315	17	2,518	743	82,366	40	5,104	398	44,362	27	3,833
Barnes -	-	-	1,365	70,259	6	1,219	412	25,773	-	-
Beaumont 160	-	-	2,100	859,613	16	1,539	802	249,765	1	160
Berwick 2,914	-	-	389	23,234	44	6,288	194	11,885	15	2,914
Bideford -	-	-	859	42,284	-	-	188	14,409	-	-
Boston 2,110	-	-	665	32,228	29	3,834	360	19,606	16	2,110
Bristol 624	-	-	4,215	209,330	36	4,791	1,406	80,970	3	624
Bridport 1,280	-	-	109	9,783	10	1,280	24	1,869	10	1,280
Bristol 22,018	17	3,127	7,079	641,515	379	97,415	4,278	440,173	78	25,145
Bristol 1,575	-	-	1,728	112,273	9	2,095	422	33,011	5	1,575
Cadiz 16,201	39	10,436	3,400	415,274	1,033	256,151	9,611	1,267,153	2,044	526,637
Cardiff -	-	-	495	13,182	-	-	42	1,298	-	-
Cardiff 4,338	-	-	528	97,301	11	4,784	776	116,371	7	4,338
Chester -	-	-	358	13,101	1	83	281	11,296	-	-
Chester 623	-	-	1,624	84,731	6	1,450	1,268	64,748	2	623
Colchester 2,287	-	-	651	50,323	40	3,603	254	11,703	25	2,287
Cowes 1,777	1	1,275	795	56,014	10	1,147	233	8,407	23	3,052
Dartmouth 531	-	-	735	46,533	16	2,497	472	29,863	3	531
Deal 2,206	-	-	219	14,732	37	2,969	79	4,600	27	2,206
Dover 3,568	445	53,655	861	117,611	748	101,528	201	14,617	501	57,223
Exeter 3,458	-	-	588	64,577	44	6,564	142	9,216	21	3,458
Falmouth 2,964	1	109	827	90,981	125	8,671	291	21,113	38	3,073
Faversham 509	-	-	1,681	131,542	4	469	930	41,162	5	509
Fleet 1,807	-	-	777	176,410	8	2,052	624	158,552	7	1,807
Folkestone 394	-	-	1,086	107,733	10	1,098	781	130,060	4	394
Fowey 12,984	-	-	998	72,651	54	6,316	697	53,700	149	12,984
Gainsborough 306	-	-	198	10,118	5	458	302	13,742	3	306
Gloucester 19,183	-	-	1,171	111,149	420	78,375	3,175	134,323	94	19,183
Goole 2,428	2	163	1,937	164,650	43	4,045	1,941	164,830	26	2,593
Grimmouth 55	26,853	-	592	115,371	586	123,923	691	118,236	589	132,234
Harwich 78,234	6	2,430	1,450	288,941	1,063	135,438	6,032	913,891	1,451	175,664
Harwich 2,717	-	-	792	166,194	44	4,572	617	140,866	41	2,717
Hayling 1,976	-	-	1,441	152,622	42	4,620	662	73,151	12	1,976
Hull 103,410	172	66,861	2,820	689,287	1,386	296,882	2,699	666,558	1,287	270,271
Immingham 13,925	-	-	1,090	92,063	104	20,786	802	49,868	131	13,925
Lancaster 1,250	-	-	1,566	160,736	23	4,403	2,300	254,998	5	1,250
Liverpool 70	37,100	-	11,399	3,766,983	1,208	457,464	11,100	3,566,406	1,095	444,299
Llandudno 30,784	-	-	1,702	133,585	336	26,507	2,794	223,185	412	30,784
Lowestoft 9,943	-	-	797	83,082	130	22,090	241	15,339	46	9,943
Lyme -	-	-	129	7,858	2	106	36	1,711	-	-
Lynn 3,063	-	-	1,285	116,590	123	11,616	566	44,834	32	3,063
Malden 2,033	-	-	1,114	75,436	31	3,087	980	41,703	15	2,033
Maryport 497	-	-	305	28,568	4	412	3,178	296,907	2	497
Middlesbrough 70,444	-	-	751	111,456	449	43,980	2,794	305,637	682	70,444
Milford 1,324	-	-	1,285	206,017	7	2,006	1,356	144,397	3	1,324
Newcastle 32,997	14	3,305	5,039	919,347	2,414	407,671	13,810	2,914,683	4,006	736,302
Newcastle 2,216	-	-	990	155,000	51	2,649	634	102,570	43	2,216
Newport 7,848	-	-	2,767	257,854	237	55,112	7,832	616,340	366	107,848
Padstow 418	-	-	762	39,193	13	2,131	277	15,069	2	418
Penzance 3,701	-	-	1,007	96,077	84	7,162	304	21,243	36	3,701
Plymouth 14,886	-	-	3,426	473,623	299	34,931	1,925	284,862	107	14,886
Poole 8,618	-	-	693	64,184	68	8,472	329	27,538	57	8,618
Portsmouth 13,922	-	-	1,245	142,343	138	17,784	626	29,735	105	13,922
Prestwich 571	-	-	471	26,075	10	853	498	28,538	7	571
Ramsgate -	-	-	304	27,964	11	1,261	66	4,448	-	-
Rochester 12,237	-	-	3,145	346,281	106	14,041	1,506	67,165	103	12,237
Runeburg 8,256	-	-	1,539	102,409	29	3,828	3,025	197,100	73	8,256
Rye 2,540	-	-	488	38,375	28	3,522	54	3,441	15	2,540
Scarborough 163	-	-	399	21,887	12	864	25	1,343	4	163
Scilly -	-	-	179	10,659	2	224	168	9,894	-	-
Shields 33,261	3	722	1,059	206,108	462	69,564	1,730	284,652	295	33,963
Shields 266	-	-	128	82,520	80	18,719	87	10,252	1	266
Shoreham 15,821	-	-	692	101,981	306	20,244	125	7,966	272	15,821
Southampton 26,965	45	81,520	2,669	534,150	473	115,371	1,537	326,363	435	108,485
Stockport 1,842	-	-	382	43,062	110	13,119	304	34,393	14	1,842
Sunderland 221,737	47	18,003	2,400	412,032	1,048	171,634	11,902	2,012,694	1,384	239,740
Swansea 182,877	3	653	4,411	473,423	914	113,438	6,979	724,445	1,266	183,530
Teignmouth 2,567	-	-	659	61,115	19	2,628	158	11,575	22	2,567
Truro 9,475	-	-	825	77,469	49	12,515	509	44,632	36	9,475
Wells 55	-	-	543	29,709	30	1,824	244	12,241	1	55

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(continued)

	Sailin	TOTAL INWARDS.				TOTAL OUTWARDS.			
		BRITISH.		FOREIGN.		BRITISH.		FOREIGN.	
		Sailing and Steam Vessels.		Sailing and Steam Vessels.		Sailing and Steam Vessels.		Sailing and Steam Vessels.	
		Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
ENGLAND—contd.									
Weymouth - -	372	511	49,159	29	4,174	180	22,030	19	3,029
Whitby - - -	574	617	30,086	1	21	120	7,680	—	—
Whitehaven - -	684	933	74,486	12	1,689	4,389	365,927	14	1,869
Wisbeach - - -	437	507	44,724	102	16,847	247	16,243	52	10,658
Woodbridge - -	410	410	23,070	9	736	273	13,274	7	641
Workington - -	138	151	9,774	—	—	1,292	118,788	1	101
Yarmouth - - -	1,399	1,605	165,052	116	14,714	686	74,829	82	8,704
London - - -	15,957	22,233	5,547,182	4,300	1,164,340	12,471	2,763,956	3,657	985,717
TOTAL, ENGLAND -	102,699	130,543	20,349,505	20,355	4,069,341	142,132	21,240,225	21,423	4,358,418
SCOTLAND:									
Aberdeen - - -	1,513	1,936	318,589	169	24,005	1,094	219,264	49	7,656
Alloa - - -	66	66	8,525	114	14,229	143	16,668	368	41,636
Arbroath - - -	492	492	39,783	28	3,741	229	17,830	3	553
Ardrossan - - -	198	468	82,052	1	137	2,384	293,053	150	24,769
Ayr - - -	213	277	23,366	11	1,143	1,340	96,277	10	1,057
Banff - - -	412	412	26,066	53	3,670	271	16,248	33	2,127
Borrowstoness -	124	124	11,350	170	16,982	795	77,426	708	71,037
Campbeltown - -	432	668	50,166	19	1,860	434	42,053	—	—
Dumfries - - -	620	771	44,404	3	492	449	35,523	2	350
Dundee - - -	1,875	2,115	309,698	280	45,225	677	139,182	197	32,707
Glasgow - - -	1,251	3,068	765,854	160	39,732	4,920	1,033,481	181	48,651
Grangemouth - -	205	449	102,494	432	59,913	529	120,911	507	78,758
Greenock - - -	1,096	1,893	338,560	118	35,082	1,018	192,852	54	22,778
Inverness - - -	1,399	1,754	139,328	61	5,427	1,610	128,820	54	4,776
Kirkaldy - - -	343	488	40,070	204	18,647	1,240	91,035	597	55,284
Kirkwall - - -	274	499	37,324	8	522	451	35,520	7	904
Leith - - -	1,104	1,967	478,888	1,040	137,833	1,582	439,168	243	47,066
Lerwick - - -	95	144	24,334	29	2,271	112	21,950	28	2,867
Montrose - - -	814	816	75,298	165	31,937	538	51,272	165	32,275
Perth - - -	143	143	10,245	25	2,525	162	11,130	5	687
Peterhead - - -	490	494	31,997	67	4,310	417	28,399	62	4,095
Port Glasgow - -	69	70	31,516	13	4,170	53	25,082	7	2,003
Stornoway - - -	134	223	28,983	2	156	201	28,335	1	82
Stranraer - - -	461	594	47,410	3	856	308	34,389	—	—
Troon - - -	129	131	13,827	12	2,245	3,034	264,010	168	41,236
Wick - - -	587	896	78,066	80	4,262	680	72,321	89	5,103
Wigtown - - -	544	537	30,525	—	—	455	28,706	—	—
TOTAL, SCOTLAND -	15,083	21,545	3,188,718	3,267	461,372	25,126	3,561,405	3,688	527,957
IRELAND:									
Ballina - - -	48	101	9,243	—	—	105	9,308	—	—
Belfast - - -	5,375	7,300	1,120,470	195	35,096	2,405	666,541	34	8,720
Coleraine - - -	193	434	63,910	2	363	179	34,967	—	—
Cork - - -	1,734	2,191	405,423	156	55,313	1,534	296,083	18	6,077
Drogheda - - -	493	749	121,213	5	719	413	98,456	2	372
Dublin - - -	5,772	7,596	1,285,913	204	52,892	4,278	976,881	74	18,941
Dundalk - - -	657	859	134,430	9	1,429	301	93,271	1	144
Galway - - -	97	99	17,955	25	8,600	55	9,497	9	3,324
Limerick - - -	229	322	72,618	61	20,285	275	60,613	10	3,541
Londonderry - -	723	1,239	214,300	60	15,348	671	153,557	8	1,469
Newry - - -	1,109	1,416	153,574	45	6,810	518	86,375	15	2,574
Ross - - -	274	598	51,239	15	4,186	397	34,816	—	—
Skibbereen - - -	211	211	13,931	3	790	127	8,802	—	—
Sligo - - -	177	374	62,192	26	7,562	319	55,753	6	2,002
Strangford (five months)	180	180	9,890	—	—	115	5,604	—	—
Tralee - - -	124	168	29,320	16	4,734	57	4,138	—	—
Waterford - - -	1,116	1,872	391,779	81	26,214	1,289	299,385	1	485
Westport - - -	55	70	7,267	5	1,105	78	7,140	10	3,476
Wexford - - -	667	771	71,191	—	—	408	44,477	—	—
TOTAL, IRELAND -	19,234	26,556	4,235,858	908	241,446	13,524	2,945,664	188	51,125
ISLE OF MAN - - -									
ISLE OF MAN - - -	1,229	1,533	121,811	27	3,343	813	80,005	22	2,687
*CHANNEL ISLANDS -	1,117	1,436	97,276	403	28,196	1,491	84,073	398	23,888

Ireland where the vessels entered and cleared.

General Register and Record Office
London, 18thJohn J. Mayo,
Registrar General of Shipping and Seamen.

A RETURN of the NUMBER and TONNAGE of SAILING VESSELS Registered at each of the PORTS of the COLONIES of the United Kingdom respectively, distinguishing those under and those above Fifty Tons Register, on the 31st day of December 1865 :—A similar RETURN of STEAM VESSELS and their TONNAGE.

	SAILING VESSELS.				STEAM VESSELS.			
	Of and under 50 Tons.		Above 50 Tons.		Of and under 50 Tons.		Above 50 Tons.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
EUROPE :								
Malta - - -	57	992	106	27,895	—	—	—	—
Gibraltar - - -	31	794	37	9,782	2	39	3	812
AFRICA :								
Sierra Leone - - -	28	616	7	1,057	1	38	—	—
Bathurst - - -	15	386	12	1,393	—	—	—	—
Cape of Good Hope - - -	18	571	53	12,087	- - -	- - -	3	332
Mauritius - - -	76	2,403	86	22,889	- - -	- - -	2	154
ASIA :								
Bombay - - -	4	102	142	37,532	1	38	13	2,313
Calcutta - - -	-	-	133	86,217	1	22	32	5,669
Cochin - - -	-	-	35	10,542	—	—	—	—
Coringa - - -	-	-	5	1,415	—	—	—	—
Madras - - -	-	-	10	2,051	—	—	—	—
Penang - - -	6	252	82	15,819	—	—	—	—
Singapore - - -	45	1,597	141	40,992	1	32	4	280
Ceylon - - -	211	7,122	174	14,901	- - -	- - -	1	266
Moulmein - - -	-	-	12	4,900	- - -	- - -	1	100
Hong Kong - - -	-	-	20	7,544	- - -	- - -	9	3,350
AUSTRALIA :								
Sydney - - -	217	5,669	321	50,905	19	432	56	11,851
Melbourne - - -	143	3,863	315	51,713	13	360	16	1,608
Hobart Town - - -	92	2,445	93	16,729	1	29	5	900
Launceston - - -	26	676	10	1,646	1	46	5	733
Adelaide - - -	29	751	51	10,624	4	143	10	1,424
Fremantle - - -	27	616	5	1,024	2	35	—	—
New Zealand - - -	305	7,854	68	9,905	6	195	18	2,217
AMERICA (BRITISH NORTHERN COLONIES):								
Newfoundland - - -	929	28,667	551	57,813	3	101	3	442
Canada - - -	378	12,777	649	113,621	45	1,263	117	25,543
New Brunswick - - -	366	9,577	563	217,204	13	361	18	4,779
Nova Scotia and Cape Breton.	1,693	46,761	1,734	327,933	4	143	7	1,204
Prince Edward Island	93	2,035	176	37,066	- - -	- - -	3	848
BRITISH WEST INDIES :								
Antigua - - -	49	698	7	441	—	—	—	—
Barbadoes - - -	18	536	42	7,004	—	—	—	—
Dominica - - -	6	142	2	380	—	—	—	—
Grenada - - -	34	499	1	68	—	—	—	—
Jamaica - - -	94	2,317	53	7,332	- - -	- - -	1	283
Montserrat - - -	-	-	3	171	—	—	—	—
Nevis - - -	2	89	—	—	—	—	—	—
St. Christopher - - -	19	319	14	1,905	—	—	—	—
St. Lucia - - -	9	267	1	250	—	—	—	—
St. Vincent - - -	40	594	4	599	—	—	—	—
Tobago - - -	-	-	1	57	—	—	—	—
Tortola - - -	16	196	8	1,111	—	—	—	—
Trinidad - - -	53	838	9	966	—	—	—	—
Bahamas - - -	390	7,740	294	48,009	1	26	20	6,648
Bermuda - - -	9	321	48	9,169	- - -	- - -	2	501
Demerara - - -	55	1,462	28	4,124	1	33	2	326
Berbice - - -	17	300	2	133	—	—	—	—
Ruatan - - -	16	207	1	183	—	—	—	—
Belize - - -	34	717	7	614	—	—	—	—

General Register and Record Office of Shipping and Seamen,
London, 18 May 1866.

John J. Mayo,
Registrar General of Shipping and Seamen.

A RETURN of the NUMBER and TONNAGE of NEW VESSELS Built in the United Kingdom, and at each of the British Possessions respectively (distinguishing Timber from Iron, and Steam from Sailing Vessels), and Registered as British Ships, in the Year 1865.

	SAILING VESSELS.				STEAM VESSELS.			
	Timber.		Iron.		Timber.		Iron.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
UNITED KINGDOM:								
England - - -	667	114,326	89	63,540	31	1,192	224	120,407
Scotland - - -	122	34,823	22	18,111	6	1,042	110	52,385
Ireland - - -	17	1,351	5	3,404	1	33	10	4,590
TOTAL for United Kingdom - }	806	150,500	116	85,055	38	2,267	344	177,382
BRITISH POSSESSIONS:								
Channel Islands -	39	5,155	—	—	—	—	—	—
Malta - - -	2	198	—	—	—	—	—	—
North American Pro- vinces - - - }	747	194,642	- -	- -	12	1,949	—	—
West Indies - -	50	797	—	—	—	—	—	—
Australia and New Zealand - - - }	102	6,854	- -	- -	7	394	7	464
East Indies and Singa- pore - - - }	39	3,967	- -	- -	5	682	—	—
Mauritius - - -	3	93	—	—	—	—	—	—
Cape of Good Hope -	3	78	—	—	—	—	—	—
Sierra Leone - -	3	37	—	—	—	—	—	—
TOTAL for British Possessions - }	988	211,821	- -	- -	24	3,025	7	464
TOTAL for United Kingdom and British Possessions - }	1,794	362,321	116	85,055	62	5,292	351	177,846

General Register and Record Office of Shipping and Seamen, }
London, 18 May 1866.

John J. Mayo,
Registrar General of Shipping and Seamen.

A RETURN of the NUMBER of VESSELS, with their TONNAGE (distinguishing Timber from Iron, and Steam from Sailing Vessels), that were Registered in the United Kingdom as new Ships in the Year 1865.

	TIMBER.		IRON.	
	Vessels.	Tons.	Vessels.	Tons.
Sailing Vessels - - - - -	916	203,217	116	85,055
Steam Vessels - - - - -	39	2,977	346	178,767
TOTAL - - -	955	206,194	462	263,822

Note.—This Return includes Vessels bought of Foreigners.

General Register and Record Office of Shipping and Seamen,
London, 18 May 1866.

John J. Mayo,
Registrar General of Shipping and Seamen.

A RETURN of VESSELS Sold and Transferred in the United Kingdom, in the Year 1865, distinguishing Steam from Sailing Vessels.

	VESSELS.	TONS.
Sailing Vessels - - - - -	1,294	291,014
Steam Vessels - - - - -	143	44,831
TOTAL - - -	1,437	335,845

General Register and Record Office of Shipping and Seamen,
London, 18 May 1866.

John J. Mayo,
Registrar General of Shipping and Seamen.

A RETURN of VESSELS Wrecked in the Year 1865, belonging to the United Kingdom.

	VESSELS.	TONS.
Sailing Vessels - - - - -	532	144,606
Steam Vessels - - - - -	39	12,420
TOTAL - - -	571	157,026

General Register and Record Office of Shipping and Seamen,
London, 18 May 1866.

John J. Mayo,
Registrar General of Shipping and Seamen.

A RETURN of VESSELS Broken up in the Year 1865, belonging to the United Kingdom.

	VESSELS	TONS.
Sailing Vessels - - - - -	53	11,581
Steam Vessels - - - - -	16	6,821
TOTAL - - -	69	18,402

General Register and Record Office of Shipping and Seamen,
London, 18 May 1866.

John J. Mayo,
Registrar General of Shipping and Seamen.

A RETURN of the NUMBER of COLONIAL-BUILT VESSELS, and their Tonnage, Registered at each of the Ports of the United Kingdom, in the Year 1865; distinguishing the Number and Tonnage of each Colony respectively.

	CANADA.		NEW BRUNSWICK.		NOVA SCOTIA AND CAPE BRETON.		PRINCE EDWARD ISLAND.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
London - - - - -	2	1,229	-	-	1	108	-	-
Aberystwith - - - - -	-	-	1	768	-	-	-	-
Carnarvon - - - - -	1	433	-	-	-	-	-	-
Liverpool - - - - -	4	4,167	6	6,691	-	-	1	141
Plymouth - - - - -	1	445	-	-	2	401	-	-
Scarborough - - - - -	-	-	1	772	-	-	-	-
Truro - - - - -	-	-	-	-	1	100	-	-
Ardrossan - - - - -	1	475	-	-	-	-	-	-
Glasgow - - - - -	2	2,385	3	2,300	-	-	-	-
Dublin - - - - -	-	-	1	115	-	-	-	-
TOTAL - - -	11	9,134	12	10,646	4	609	1	141

General Register and Record Office of Shipping and Seamen,
London, 18 May 1866.

John J. Mayo,
Registrar General of Shipping and Seamen.

A RETURN of the NUMBER of FOREIGN-BUILT VESSELS, and their TONNAGE, Registered at each of the Ports of the United Kingdom, in the Year 1865.

	VESSELS.	TONS.		VESSELS.	TONS.
London - - - - -	15	6,737	Shields, South - - - - -	1	417
Berwick - - - - -	1	56	Sunderland - - - - -	1	592
Boston - - - - -	1	60	Wells - - - - -	1	77
Bristol - - - - -	1	147	Weymouth - - - - -	1	50
Carnarvon - - - - -	2	130	Whitby - - - - -	1	805
Colchester - - - - -	1	154	Yarmouth - - - - -	3	254
Dover - - - - -	1	108	Aberdeen - - - - -	2	1,104
Exeter - - - - -	1	138	Glasgow - - - - -	2	1,655
Falmouth - - - - -	1	244	Greenock - - - - -	1	1,175
Faversham - - - - -	1	27	Inverness - - - - -	1	59
Hull - - - - -	4	837	Kirkaldy - - - - -	1	69
Liverpool - - - - -	24	13,843	Leith - - - - -	2	894
Lowestoft - - - - -	2	280	Wick - - - - -	1	58
Maldon - - - - -	1	126	Belfast - - - - -	2	1,307
Newcastle - - - - -	1	1,379	Cork - - - - -	4	935
Ramsgate - - - - -	2	292			
Rochester - - - - -	1	56	TOTAL - - -	85	34,282
Scilly - - - - -	1	223			

General Register and Record Office of Shipping and Seamen,
London, 18 May 1866.

John J. Mayo,
Registrar General of Shipping and Seamen.

A RETURN of the SHIPPING employed in the Trade of the United Kingdom, exhibiting the Number and Tonnage of Vessels that entered Inwards and cleared Outwards (including their repeated Voyages), separating British from Foreign Vessels, also Steam from Sailing Vessels, and distinguishing the Trade with each Country, in the Year 1865.

COUNTRIES.		INWARDS.				OUTWARDS.			
		BRITISH.		FOREIGN.		BRITISH.		FOREIGN.	
		Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
Russia - - - -	Steam	239	155,752	18	17,348	209	138,671	18	18,419
	Sailing	2,063	500,470	2,241	549,565	1,815	323,211	1,095	242,603
Sweden - - - -	Steam	116	55,097	46	18,145	97	48,590	40	16,070
	Sailing	443	86,498	2,233	484,111	320	60,498	1,500	315,951
Norway - - - -	Steam	70	20,414	19	6,805	67	20,111	47	12,923
	Sailing	333	27,051	2,512	471,004	196	21,947	2,488	493,833
Denmark - - - -	Steam	73	28,519	21	6,478	120	48,866	29	8,718
	Sailing	55	7,391	1,507	129,495	527	100,116	4,177	573,371
Prussia - - - -	Steam	237	111,785	55	18,254	217	103,643	46	14,943
	Sailing	818	120,305	1,779	356,467	925	143,967	1,875	382,946
Germany - - - -	Steam	1,144	493,807	318	202,082	1,033	430,599	258	115,424
	Sailing	1,419	264,826	2,199	279,987	1,381	243,588	2,724	305,263
Holland - - - -	Steam	1,468	501,119	254	76,952	1,295	418,476	281	73,390
	Sailing	1,223	194,282	1,493	190,356	1,073	152,218	587	45,345
Belgium - - - -	Steam	794	248,069	523	86,049	767	236,213	551	86,951
	Sailing	671	82,552	616	110,302	509	43,950	66	10,367
Channel Islands - - -	Steam	517	100,032	-	-	526	102,905	-	-
	Sailing	1,276	137,387	25	2,796	816	63,269	6	284
France - - - -	Steam	4,372	1,016,218	393	85,408	4,016	965,496	173	51,640
	Sailing	4,829	584,064	5,026	480,256	4,856	592,395	4,276	337,966
Portugal - - - -	Steam	140	61,449	22	8,932	158	64,371	19	6,749
	Sailing	974	142,498	246	36,416	677	108,269	323	60,291
Spain - - - -	Steam	115	46,866	115	52,094	102	44,721	126	56,281
	Sailing	793	172,495	309	74,185	1,181	235,906	670	145,540
Gibraltar - - - -	Steam	42	27,456	-	-	67	45,887	-	-
	Sailing	28	7,843	17	6,114	217	39,261	26	7,463
Italian States - - - -	Steam	163	117,702	-	-	152	117,500	7	3,137
	Sailing	416	78,754	263	75,677	639	167,932	1,005	300,515
Malta - - - -	Steam	7	4,377	-	-	28	31,880	-	-
	Sailing	20	7,683	8	4,586	163	57,977	82	30,029
Ionian Islands - - -	Steam	5	3,113	-	-	6	3,594	-	-
	Sailing	21	3,079	3	567	37	7,042	29	10,218
Greece - - - -	Steam	32	19,202	-	-	18	12,575	1	277
	Sailing	81	12,713	29	6,252	37	9,129	47	13,453
Turkey - - - -	Steam	77	83,431	-	-	76	86,093	3	1,535
	Sailing	345	109,919	269	90,133	223	60,360	275	86,084
Wallachia and Moldavia -	Steam	1	230	-	-	-	-	-	-
	Sailing	57	11,832	34	20,588	50	9,097	13	2,605
Syria - - - -	Steam	1	1,212	-	-	-	-	-	-
	Sailing	4	1,312	-	-	18	5,986	17	5,452
Africa - - - -	Steam	275	297,162	6	3,783	248	247,726	11	1,563
	Sailing	640	194,063	173	51,248	990	344,867	364	126,090
Asia - - - -	Steam	15	19,016	-	-	40	21,056	5	2,510
	Sailing	1,229	1,024,900	101	67,618	1,479	1,283,368	150	101,991
America:									
British Northern Colonies	Steam	64	77,056	-	-	61	90,130	-	-
	Sailing	1,610	950,407	243	158,616	1,137	653,044	64	36,050
British West Indies -	Steam	51	33,198	1	269	30	22,328	1	390
	Sailing	797	252,585	77	26,746	642	213,770	58	16,539
Foreign West Indies -	Steam	40	61,841	1	130	45	64,197	-	-
	Sailing	289	108,962	247	74,311	475	192,898	397	132,563
United States - - -	Steam	255	389,105	1	400	265	397,028	45	82,406
	Sailing	173	116,982	242	221,344	428	343,165	342	341,961
Central and Southern States	Steam	66	65,668	1	260	68	58,348	1	210
	Sailing	970	373,575	365	142,325	1,126	427,047	528	164,874
Falkland Islands - - -	Steam	-	-	-	-	-	-	-	-
	Sailing	4	1,201	-	-	2	410	-	-
Whale Fisheries - - -	Steam	8	2,964	-	-	8	2,963	-	-
	Sailing	18	4,958	-	-	26	7,369	-	-
TOTAL - - -		31,986	9,623,432	24,101	4,694,454	31,184	9,735,523	24,796	4,843,683

General Register and Record Office of Shipping and Seamen,
London, 18 May 1866.

John J. Mayo,
Registrar General of Shipping and Seamen.

S H I P P I N G.

RETURNS of the Number and Tonnage of SAILING
and STEAM VESSELS Registered at each Port
of the United Kingdom, &c.; SHIPPING ENTERED
and CLEARED; SHIPS BUILT, Registered, &c.—(In
continuation of Parliamentary Paper, No. 331, of
Sess. 1865.)

(*Mr. Ingham.*)

*Ordered, by The House of Commons, to be Printed,
29 May 1866.*

VESSELS AND TONNAGE, &c.

RETURN to an Order of the Honourable The House of Commons,
dated 26 July 1866 ;—*for*,

A RETURN “showing the Number of VESSELS and TONNAGE entered Inwards and cleared Outwards at each of the Twelve principal Ports of the United Kingdom; also, the Official and Declared Value of IMPORTS and EXPORTS for each of the said Ports, during the Year 1865 (in continuation of Parliamentary Paper, No. 362, of Session 1865).”

RETURN showing the Number of VESSELS and TONNAGE entered Inwards and cleared Outwards at each of the Twelve principal Ports of the United Kingdom, during the Year 1865.

P O R T S.	ENTERED INWARDS.		CLEARED OUTWARDS.	
	Vessels.	Tons.	Vessels.	Tons.
London - - - - -	11,610	3,646,142	8,093	2,627,809
Liverpool - - - - -	4,827	2,644,821	4,425	2,631,827
Hull - - - - -	3,055	842,586	2,396	673,584
Bristol - - - - -	897	233,785	227	60,821
Newcastle - - - - -	4,546	914,819	8,012	1,770,838
Southampton - - - - -	1,458	412,359	1,354	404,276
Leith - - - - -	1,824	375,131	740	246,647
Glasgow - - - - -	559	175,537	902	360,963
Greenock - - - - -	500	198,925	241	123,671
Dublin - - - - -	522	141,234	128	41,124
Cork - - - - -	278	91,862	65	21,496
Belfast - - - - -	368	79,301	65	26,096
TOTAL - - -	30,444	9,756,502	26,648	8,998,152

General Register and Record Office of Shipping
and Seamen, Adelaide Place, London Bridge,
1 August 1866.

J. J. Mayo,
Registrar General.

2 VALUES OF IMPORTS AND EXPORTS AT TWELVE PRINCIPAL PORTS, 1865.

STATEMENT regarding the Official and Declared Value of Imports and Exports for each of the Twelve principal Ports of the United Kingdom, during the Year 1865.

										Declared Value of British and Irish Produce and Manufactures Exported from the respective Ports to Foreign Countries and British Possessions Abroad, in the Year 1865.
										£.
London	-	-	-	-	-	-	-	-	-	37,009,718
Liverpool	-	-	-	-	-	-	-	-	-	73,066,778
Hull	-	-	-	-	-	-	-	-	-	17,272,208
Southampton	-	-	-	-	-	-	-	-	-	4,012,109
Newcastle	-	-	-	-	-	-	-	-	-	2,245,462
Bristol	-	-	-	-	-	-	-	-	-	291,967
Leith	-	-	-	-	-	-	-	-	-	2,039,217
Glasgow	-	-	-	-	-	-	-	-	-	7,898,324
Greenock	-	-	-	-	-	-	-	-	-	339,537
Dublin	-	-	-	-	-	-	-	-	-	35,642
Cork	-	-	-	-	-	-	-	-	-	134,640
Belfast	-	-	-	-	-	-	-	-	-	17,563
Aggregate of the Twelve Ports - - - £.										144,363,160

Note.—The foregoing Statement, embracing a portion only of the information required by the Honourable House, is respectfully submitted as the best Return that can be made to their Order. The *Official* Value, whether of Imports or of Exports, is of necessity wholly excluded from it; this Value, which is obtained by calculation from certain fixed rates applied to the quantities of the various commodities, being computed only on the Importations and Exportations of the kingdom at large. The *Declared Value of British and Irish Produce and Manufactures Exported*, being collected from the merchants' entries, is ascertainable for each Port individually, and is accordingly exhibited.

Of the Trade carried on under Coasting Regulations between Port and Port of the United Kingdom there is no official record.

Office of the Inspector General
of Imports and Exports, Custom House, London, }
30 July 1866.

John A. Messenger.

VESSELS AND TONNAGE, &c.

RETURN showing the Number of Vessels and Tonnage entered Inwards and cleared Outwards at each of the Twelve principal Ports of the United Kingdom; also, the Official and Declared Value of Imports and Exports for each of the said Ports, during the Year 1865 (in continuation of Parliamentary Paper, No. 362, of Session 1865).

(Mr. Horsfall.)

Ordered, by The House of Commons, to be Printed,
7 August 1866.

CHAIN CABLES AND ANCHORS.

RETURN to an Order of the Honourable the House of Commons,
dated 20 February 1866 ;—*for*,

COPIES “ of all CORRESPONDENCE between the Board of Trade and the Secretary of Lloyd’s Registry of British and Foreign Shipping relating to their ESTABLISHMENT for Proving CHAIN CABLES and ANCHORS at *Poplar*, and to other Establishments for the same purpose, under their Control or Management :”

“ Of any CORRESPONDENCE between the Board of Trade and the Engineers called in to Report upon the subject of the *POPLAR PROVING MACHINE*, or other Proving Establishments under the Control or Management of Lloyd’s Registry, and the REPORTS of the Engineers referred to on the same :”

“ And, STATEMENT showing the Name of each PROVING ESTABLISHMENT Licensed under the CHAIN CABLES and ANCHORS ACT ; whether such Establishments are conducted by Private Firms, by Individuals, by Joint Stock Companies, or by Public Corporations ; the Number and Description of the Machines Licensed at each Establishment ; and, the Proof-marks approved by the Board of Trade under the Act for each of such Establishments.”

Board of Trade, }
9 March 1866. }

T. H. FARRER,
Joint Secretary.

(*Mr. Laird.*)

Ordered, by The House of Commons, to be Printed,
13 March 1866.

COPIES of all CORRESPONDENCE between the Board of Trade and the Secretary of Lloyd's Registry of British and Foreign Shipping relating to their ESTABLISHMENT for proving CHAIN CABLES and ANCHORS at *Poplar*, and to other Establishments for the same purpose, under their control or management; and of any CORRESPONDENCE between the Board of Trade and the Engineers called in to report upon the subject of the *POPLAR PROVING MACHINE*, or other Proving Establishments under the control or management of Lloyd's Registry, and the REPORTS of the Engineers referred to on the same.

— No. 1.—

Secretary of Lloyd's Register to Secretary, Board of Trade.

(W. 3180.)

Lloyd's Register of British and Foreign Shipping,
2, White Lion-court, Cornhill, E. C.,
23 November 1864.

Sir,

I AM directed by the Chairman, Thomas Chapman, Esq., to acknowledge the receipt of your letter of the 18th instant,* addressed to him, transmitting copy of some conditions which have been framed by the Board of Trade, "for the Owners of Testing Establishments who wish to obtain Licenses under the Chain Cables and Anchors Act."

It is observed at once that some of the conditions in question are such as would preclude the testing establishment belonging to this society from obtaining a license under the Act of Parliament alluded to, and believing that their testing apparatus (which has been erected at great expense, and solely on public grounds) is second in efficiency to none in the kingdom, the Committee trust that the conditions alluded to will receive some reconsideration previous to their final adoption by the Board of Trade.

In this view they have instructed their engineer, Mr. T. M. Gladstone, to report on the proposed conditions, and, if necessary, to place himself in communication with Mr. Galloway, the inspector appointed by the Board of Trade, and to this course it is hoped that the Board will not see any objection.

I am, &c.

(signed) *Geo. B. Seyfang*, Secretary.

-- No. 2. —

Secretary, Board of Trade, to Secretary of Lloyd's Register.

(W. 3180.)

Office of Committee of Privy Council for Trade,
Whitehall, 26 November 1864.

Sir,

I AM directed by the Lords of the Committee of Privy Council for Trade to acknowledge the receipt of your letter of the 23d instant, stating that the engineer to the Committee for managing the affairs of Lloyd's had been directed to place himself in communication with Mr. Galloway, on the subject of the proposed conditions for granting licenses to testing machines, under the new Act.

In

* Note.—This was a circular enclosing a copy of the conditions. See p. 8 of this Return.

In reply, I am to inform you that My Lords see no objection to the course proposed; but at the same time I am to state that if the Committee have any specific objections to offer to these conditions, their Lordships will be glad to be informed of them without delay.

The conditions have been very carefully considered, with the help of the best advice, and it is intended to issue them as soon as possible.

I am, &c.
(signed) *T. H. Farrer.*

— No. 3 —

Secretary of Lloyd's Register to Secretary, Board of Trade.

(W. 3295.)

Lloyd's Register of British and Foreign Shipping,
2, White Lion-court, Cornhill, E. C.,
3 December 1864.

Sir,

I AM directed to acknowledge the receipt of your letter, dated the 26th ultimo, having reference to the conditions proposed to be issued by the Board of Trade, on which licenses are to be granted to chain and anchor proving establishments, under the new Act.

The first condition prescribes "That the machine shall be constructed to test not more than 15 fathoms at a time.

As the machine erected by this society at Poplar is constructed so as to be able to test 75 fathoms of chain at one time, the foregoing condition would appear to preclude it being licensed by the Board of Trade; and as the Committee believe that the advance which they have made in this direction is a great improvement, both as regards economy of time and expense, they are desirous of calling the attention of the Board of Trade to the subject.

In this view the Committee desired their engineer, Mr. T. M. Gladstone, under whose advice their establishment was erected, to report on the point at issue, and I am now instructed to transmit, for the information of the Lords of the Committee of Privy Council for Trade, the enclosed extract from his reply.

I am also to add, that if the Lords of the Committee entertain any doubt of the soundness of the views set forth in Mr. Gladstone's report, this Committee will be happy to afford any facilities in their power for practically testing their validity.

As the other conditions will not affect the claims of the society's machine to be licensed under the Act, the Committee do not feel themselves called upon to trouble the Lords of the Committee of Privy Council for Trade with any remarks in regard to them.

I am, &c.
(signed) *G. B. Seyfang*, Secretary.

Enclosure in No. 3.

EXTRACT from Mr. *T. M. Gladstone's* Report, dated 30th November 1864.

Clause, No. 1.—The machine shall be constructed to test not more than fifteen fathoms at one time.

REPLY.

THIS restriction is framed upon the principle that, beyond one length of 15 fathoms, the strain is not equal, it being diminished according to increased distance from the force used, therefore undesirable.

That there is some small difference may be admitted, but it is inappreciable, as each length of 15 fathoms of chain impinges on a roller supporting the whole weight between the extremities; and, as the Admiralty scale of proof amounts to about 10 times the weight of any chain when at that proof, the chain becomes as it were one rigid bar, resting, with the smallest amount of friction, upon each roller.

At that proof the difference does not amount to the effect of one stroke of the pumps on any one part over another.

If the contrary were the fact, there would be found to be more fractures at those parts nearest to the force as exerted by the hydraulic ram.

At Lloyd's machine, where, in the two years it has been used, tens of thousands of fathoms have been tested, and tons of links and shackles broken, no such result has occurred. No difference whatever has been found between any part, and wherever a weakness, from inferior iron or imperfect workmanship, has been present, only has the fracture taken place, having no regard to ends or centre of action.

When testing the qualities of iron, on placing between each chain a short length of bar at the different distances, all being of like size and make, it was found that these did not break at the nearest to the force exerted, but uniformly separated at any indiscriminate point, whether the nearest, the centre, or the most distant, and at the weakest part of such iron.

Such restriction as to length creates increased work and expense without concomitant advantage. For one ship's chains of 300 fathoms (as required by Lloyd's Rules) 20 proofs would be required instead of four, tending to avoid the testing the shackles, which must of necessity be done when several lengths are proved together.

As it only takes about four minutes to put 75 fathoms into the machine, and four minutes after testing from the machine on to the examining bench, it will be perceived how great the saving of time, when this is done for four times instead of 20 times in single lengths.

It therefore becomes highly important to maintain the power to use the extended length, as practised at Lloyd's machine, and which has been found so perfect and economical in practice.

— No. 4. —

Secretary, Board of Trade, to Secretary of *Lloyd's Register*.

(W. 2799.)

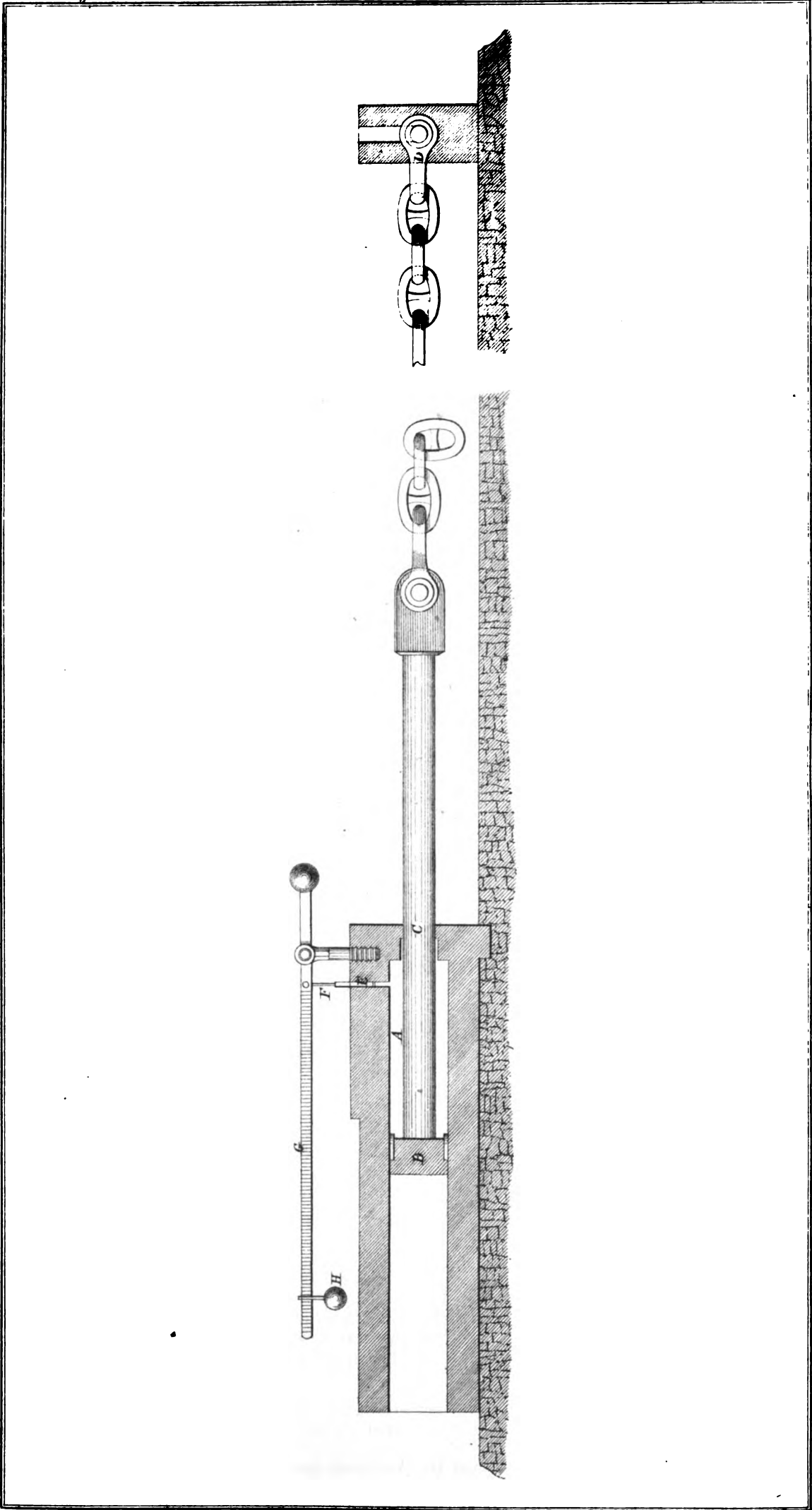
Board of Trade, Whitehall,
3 December 1864.

Sir,

I AM directed by the Board of Trade to enclose, for the information of the Committee of Lloyd's Register, a copy of the report made to the Board of Trade under the Chain Cables and Anchors Act.

I am at the same time to enclose six copies of the general conditions to be complied with by owners of proving establishments desirous of obtaining licences from this Board under the new Act.

I am, &c.
(signed) *T. H. Farrer.*



Enclosure 1, in No. 4.

REPORT to the Board of Trade, under the CHAIN CABLES and ANCHORS ACT, 1864
(27 & 28 Vict. c. 27).

Sir,
We have visited the machines for proving and testing chain cables and anchors established at the following places ; viz.,—

London, 24 October 1864.

Proving establish-
ments visited.

	Machines.		Machines.
London (Brown, Lenox, & Co.)	- 1	Cradley Heath (N. Hingley & Sons)	- 1
London, Lloyd's (W. I. Docks)	- 2	Cradley Heath (Woods & Co.)	- 1
Birkenhead	- 2	Cradley Heath (W. Rock)	- 1
Liverpool	- 1	New Town (B. Hingley)	- 1
Low Walker (Tyne)	- 2	Netherton (public machine, erecting)	- 1
Leeds (Albion Works, making)	- 1	Wolverhampton (Baylis, Jones, & Baylis)	1
Tipton (H. P. Parkes)	- 2	Wolverhampton (Baylis, Jones, & Bay-	
Tipton (public machine)	- 1	lis, erecting)	- 1
Stourbridge (Woods)	- 1	Wednesfield Heath (Woods & Co.)	- 1
West Bromwich (Bloomer)	- 1	Chester (Woods & Co.)	- 3
Tipton (Tinsley, Wright, & Co.)	- 1	Liverpool (Cato, Miller, & Co.)	- 1
Cradley (Chas. Yardley)	- 1	Liverpool (Hutchinson & Co., erecting)	1
Netherton (N. Hingley & Sons)	- 1	Hartlepool (Proctor & Taylor)	- 1
Netherton (public)	- 1	Sunderland (public machine)	- 1
Cradley (S. Lewis)	- 1	Sunderland (erecting another)	- 1
Rowley (Jones)	- 1		
Red-dal Hill (Eliza Tinsley)	- 1		
New Town (Hartsborne & Ward)	- 1		
			38

2. We have explained to the proprietors or managers of these machines that our visits were not made for the purposes of examination with a view to granting licences, but that they were preliminary unofficial visits made for purposes of general observation, and with a view to collecting information. We gave no notice of our intention to visit these establishments, and we therefore had the advantage of finding on our arrival that the business was being carried on, and that the testing machines were at work in the usual manner.

Objects of visit
explained.

3. In our visits we were met with the greatest cordiality and candour, and much valuable information was voluntarily given to us on many interesting points connected with the application of testing machines generally, the manufacture of chain cables and anchors, the quality of the various sorts of iron used, and the peculiarities and prospects of the trade.

Much valuable in-
formation volun-
tarily given by
owners of establish-
ments.

4. The nature of the machine ordinarily in use for testing chain cables and anchors will best be understood by reference to a diagram:—

General description
of the ordinary
hydraulic testing
machine.

- A is a strong cylinder of cast-iron.
B is a piston, moving in the cylinder A. This piston is intended to be made water-tight by a leather packing, and to move with very little friction.
C is the piston-rod, kept watertight by a stuffing box. This rod is connected with one end of the chain, &c. to be proved. The other end of the chain is held fast at D.
E is a small plunger. The water in the cylinder A presses on the underside of this plunger, and this plunger is supposed to be kept watertight by a leather washer. It is connected by the rod F with the graduated lever G.
H is a moveable weight for determining the pressure to be exerted on the plunger E by the water in the cylinder A.

A mercurial gauge is sometimes fitted in addition to the graduated lever and weight, G and H.

Water is pumped into the cylinder A either by hand labour or by steam power, and the pumps are kept going until the pressure of the water in the cylinder A lifts the plunger E, or until the chain breaks, whichever first happens.

The above may be taken as a general outline of the majority of the machines we have visited.

5. For an indication of the pressure exerted on the chain to be tested in the machines above described, it will be seen that reliance is placed on the plunger E and graduated lever and moveable weight G and H, with, in some cases, the addition of a mercurial gauge; but it is found in practice that the valve and plunger E and the pressure gauges are liable to great variations, from circumstances entirely beyond the control of the person working the machine; and these variations, even supposing that they can be accurately estimated, cannot be ascertained by any process which can be readily applied during the working of the machine.

Method of indicating
pressure in these
machines.

6. Unless, however, these variations are ascertained and allowed for, or unless the actual pressure exerted by the machine on the chain is measured by some additional contrivance, the machine itself cannot be relied on.

Generality of these
machines not to be
relied on.

Further, supposing that the plunger E and the mercurial gauge be correct, they may, whilst indicating the pressure in the cylinder A, really give no indication at all of the strain

put on the chain. As an example, in one machine we visited we found that the packing of the piston B had become loose, so as to admit water to pass between it and the inside surface of the cylinder A. A man, not an engineer, but a labourer, was employed in driving wooden wedges under the packing to make it fit the cylinder tightly. On replacing this piston with the wooden wedges, the wedges would swell on the water being admitted into the cylinder, and the effect would be to jam the packing against the cylinder, and either to set it fast or to require an immense force to move it.

Example.

In such a case, the force exerted in the cylinder, before the piston could be moved, might equal the Admiralty standard, and raise the plunger E without ever putting any strain on the chain at all. This is an extreme case, but it is an illustration of what has frequently happened in a less degree at many of the machines we visited. Any inaccuracy in the boring of the cylinder, or any grit or foreign substance in the cylinder, will also cause an amount of error in the value and pressure gauges that cannot be estimated.

The machine at Birkenhead is fitted with levers and dead weight.

7. In the beautiful machine made by Sir William Armstrong, and erected at Birkenhead, and also in a very perfect machine in course of erection at Low Walker, on the Tyne, there are fitted (in addition to the graduated lever and mercurial gauge)—first, a series of compound levers, showing by dead weight the actual strain put on the chain; and, secondly, indicators to distinguish the actual strain at which a chain breaks.

Levers and dead weight necessary in all other machines to be licenced.

8. From the information we have been able to collect, and from what has been stated above, these levers and dead weight, and indicators appear to be necessary in all the other machines.

Sir William Armstrong, Mr. John Penn, Mr. Fairbairn, Mr. Paget, Mr. Hick, of Bolton, Mr. H. D. Grey, of Liverpool, Mr. Thomas Dunn, of Manchester, the engineers attached to the works of the principal manufactures of chain cables and anchors, and the more intelligent of the manufacturers themselves, all concur in the necessity of providing these compound levers and dead weight in all machines intended to be licenced by the Board of Trade as public machines.

As an additional reason in favour of providing the compound levers and dead weight as a check, we may state that we have reason to believe that of the machines at present without them no two exert a like strain on a cable proved, unless by accident; and we have been requested to mention that a belief is entertained by many chain makers that the only correct public proving machines at present in existence are those at Birkenhead and Tipton, whilst some of the makers at Tipton stated, in our presence, that they believed the machine at Tipton to be entirely wrong. It breaks a great number of their chains, and in one case it was stated, that out of nine lengths sent to the machine six had been broken by it, and that several of the nine had been condemned altogether, and this after the chains had stood the test in the machine on the maker's premises.

The machine and establishment at Tipton can readily be made most efficient and most complete. At present the machine is not fitted with levers and dead weight; it is, therefore, impossible yet to say whether it is right or wrong.

As regards the machine at Birkenhead there can be no question, and the accuracy of the one at Tipton might easily be tested by the addition of the levers and dead weight.

Examples of imperfect machines visited.

9. At one machine (a very short one), we found the manager testing the chains double; at another we found some broken pieces of old iron hung on to the graduated lever, instead of a proper weight; at another the lever was not graduated at all; at another (that of Mr. Barzilai Hingley, at New Town) we were refused admission, but were informed, that if we returned in a week the machine "would be got ready for us to see;" and at Bishon's Wharf, Netherton, we found a public machine that was absolutely worthless. This machine had been, and still is, we are informed, employed in publicly testing chain cables for certificates of proof. The person in charge candidly told us that he had never broken an inch and three-quarter chain at it. These five machines, not having dead weights and levers, cannot be checked.

Lloyd's machine in London; its peculiarities and alleged defects.

10. The public machine erected for Lloyd's in London is spoken of by very many persons with anything but confidence, and by many it is represented as being quite inaccurate; it is spoken of as being just the reverse of the one at Tipton. That is said to put too great a strain on, and the one in London too little. The London machine, like the others complained of, is not fitted with levers and dead weight, and no one can, therefore, say what is the actual strain put on the chain. There is, besides, a peculiarity in the machine at London which was specially and frequently mentioned to us. In all other machines that we have seen, a chain cable is tested in lengths of 15 fathoms or less; but at this machine the length tested is 75 fathoms. In attempting to test a cable of this length, a great part of the force of the machine is exerted in lifting the chain from the bed. When a 15 fathom length is tested the chain is stretched perfectly tight, like a string on a violin; but in the 75 fathom length the chain is never pulled out of the form of a curve, or rather a series of curves or festoons.

The London machine (Lloyd's) is provided with a roller at every 15 fathoms along the trough, to assist in raising the chain from the floor of the bed. The chain passes over these rollers, and when the strain is on, hangs in curves from roller to roller along the whole length (75 fathoms) of the machine.

Again, a length of new chain of 15 fathoms will stretch from four feet upwards (we have seen a 15 fathom length stretch as much as six feet six inches), so that the cylinder A in the diagram is generally made about eight feet long for a 15 fathom length. To meet the stretching

stretching of a chain cable of 75 fathoms properly tested, the cylinder A ought to be from 25 to 30 feet. The cylinder at Lloyd's machine in London is only 11 feet in length.

As an additional proof that the strain exerted by all public machines is not alike, an iron-master at Tipton informed us that he would supply iron in any quantities, guaranteed to pass the London (Lloyd's) machine, at 10 s. a ton less than he could if it were to pass the machine at Tipton or Birkenhead; and several chain-makers informed us that they could afford to sell chain at 10 s. a ton cheaper if they knew it was to pass the London (Lloyd's) machine, than they could if it were to pass the Birkenhead or Tipton machine, although we understood that the difference in the freight to London was 10 s. a ton more than to Birkenhead, and 15 s. a ton more than to Tipton.

11. We also learnt that at Lloyd's machine in London the chains are blacked before they are tested. This is contrary to the practice at every other place we have visited. Chain-makers openly ridicule the idea of testing a chain after it is blacked; and it was proved by actual experiment in our presence at Tipton, that many flaws, for which a chain is condemned if tested unblacked, escape notice if the chain is tested after it is blacked. The examination of each link of an unblacked chain by two pairs of eyes after it has been in the machine leads to the condemnation of as many, and sometimes of more links than the actual breakages in the machine itself. The chain-makers in Staffordshire strongly represented to us the necessity for a uniform test and a uniform practice throughout the United Kingdom; but some of them said if the present practice is to be continued at Lloyd's in London, it would positively be a pecuniary advantage to them to black their chains free of charge, and send them to London to be tested, rather than send them to the machine at Tipton or Birkenhead to be tested unblacked.

Practice of blacking chains at Lloyd's before testing them, much objected to.

When at Manchester we had a long interview with Mr. Thomas Dunn, the maker of the machine belonging to Lloyd's in London. He assured us that he was not in any way responsible for its peculiarities, and he entirely agreed that it ought to have been made shorter.

12. As regards the Act itself, we find that it is, with one or two exceptions, looked on and received as a great boon. It was represented to us that it will be the means of raising the cable trade from what it is described as "its present lamentable condition," and that it will be of immense value to the honest maker in the foreign trade. We have been shown specimens of bad iron, almost resembling plate glass in brittleness, that has been used in making chains to meet the market; and we have been shown good iron that may be used, and if used that will make a chain guaranteed to stand 15 per cent. beyond the Admiralty proof. We were told repeatedly that the honest maker now sees his way to making a really good chain at a profit without fear of being undersold by a bad article made by a small maker.

The new Act well received.

13. The great majority of chain-makers also object strongly to any maker being allowed to test his own cables for the purposes of giving a certificate of public proof. And many makers who intend to go to the expense of making their machines perfect, have expressed their determination not to take out a licence, but to have all their work tested at a public machine.

Objections raised to makers testing their own cables, &c.

Many chain cable makers expressed a hope that the Committee of Lloyd's Register will refuse to class a ship unless her cables and anchors are proved at a machine other than the one belonging to the establishment at which they are made. They stated that such a rule had been made, but that they feared that it had been departed from in favour of one or two makers. We stated that this appeared to us to be a point with which the Board of Trade cannot properly interfere; but we were nevertheless particularly requested to mention the subject in our report.

14. We find the feeling almost unanimous in favour of charging the full fee of 50 l. for a licence under the Act; and considering that most of the makers will not, at any rate at present, take out licences for their private machines, it may perhaps be necessary at first to charge the full fee to meet expenses. It was stated that we might reduce the fee at any time, but might find difficulties in raising it.

Amount of fee to be charged for licences.

Those gentlemen with whom we conversed on the subject strongly urged the necessity of the Board of Trade issuing books of blank forms of certificates and counterfoils, printed or engraved in a peculiar manner. This would, they seem to think, render forgery of a certificate doubly difficult and hazardous.

It has often formed the subject of conversation with owners of machines whether the Board of Trade licence would apply to an establishment generally, or to a certain machine in that establishment. The opinion generally expressed is in favour of a separate licence being given for each machine. It has been stated that by adopting this course there would be less chance of a cable being tested at an unlicensed machine in the same premises as one for which a licence has been obtained.

15. It has been frequently urged upon us that an immense advantage would be conferred on the anchor and cable trade if the Board of Trade were to communicate with the governments of foreign countries on the subject of the recent Act, so that foreigners may be made aware of the advantages of buying for shipping purposes no cables and anchors that have not been tested and certified at a public machine.

Often urged that the attention of Foreign Governments should be called to the Act.

We have also been requested to advise that some particulars should be published, at an early date, of the general requirements of the Board of Trade as regards testing establishments.

Recommendations.

16. In conclusion, we beg to state that, from what we have seen during our recent journey, it appears to be absolutely necessary that machines to be licenced by the Board of Trade as public machines should be constructed and fitted in accordance with the experience of such men as Sir William Armstrong, Mr. John Penn, Mr. Fairbairn, Mr. Paget, Mr. Hicks, and Mr. Dunn and others, as above stated, practical men who have given their attention to the subject. It also appears necessary that the rules for testing, and the strain applied, should be uniform throughout the United Kingdom.

Proposed requirements.

17. We therefore submit that a short advertisement may be published, stating the requirements of the Board of Trade, and we submit that those requirements be as follows, viz.:

1. The machine shall be constructed to test not more than 15 fathoms at one time.
2. The cylinder shall be sufficiently long to allow of 15 fathoms chain being tested without the necessity for taking a fresh hold to complete the strain.
3. The apparatus shall, in addition to the plungers and pressure gauges ordinarily fitted, be provided with levers and dead weight (at the end of the chain marked D in the diagram), sufficient to test the accuracy of the machine and the strain applied to cables being tested.
4. That an indicator be fitted to show the strain at which a chain breaks.
5. That an examining bench be provided in a light place for the purpose of examining the chains after they are tested, and before they are blacked.
6. That no chains be tested after they are blacked.
7. And although this is perhaps not strictly within the Act, we would recommend that the machine be so arranged that the workmen employed at and near to it shall be in no danger from the fragments of links that fly about when a cable breaks.
8. Where there is more than one machine in an establishment, the whole of them must be licenced if one is.

Our report is more lengthy than we at first intended; but we have only reported such matter as appeared to us to be essential, or such statements as were represented to us by persons in the trade as being of importance.

Places not yet visited.

18. The establishments at South Shields, and in South Wales and Scotland, have not yet been visited.

We have, &c.
(signed) *Robert Galloway.*
Thomas Gray.

Enclosure 2, in No. 4.

CHAIN CABLES AND ANCHORS TESTING MACHINES.

(27 & 28 VICT., Cap. 27.)

The following are the general conditions to be complied with by owners of proving establishments in order to obtain licences under the Act.

1. THE machine shall be constructed to test not more than 15 fathoms at one time.
2. In hydraulic machines the cylinder shall be sufficiently long to allow of 15 fathoms of chain being tested without the necessity for taking a fresh hold to complete the strain.
3. The apparatus shall be provided with levers and dead weight sufficient to test the accuracy of the machine and the strain actually applied to the cable. In hydraulic machines these levers and dead weight shall range to 25 per cent. of the full power of the machine, and shall be fitted in addition to the gun metal plunger and pressure gauges ordinarily fitted. In other than hydraulic machines the levers and dead weight shall range to the full power of the machine.
4. In hydraulic machines an indicator shall be fitted to show the strain at which a chain breaks.
5. An examining bench of proper height shall be provided in a light place for the purpose of examining the chains after they are tested and before they are blacked.
6. The machine shall be so arranged that the workmen employed at and near to it shall be in no danger from the fragments of links that fly about when a cable breaks.
7. Where there is more than one machine in an establishment, the whole of them must be licenced if one of them is.

Although the Board of Trade will not refuse to licence any machine simply on account of the proportions of the levers and knife edges named below not being observed, they recommend that in all future machines those proportions should be adopted.

8. The

8. The leverage of the lever apparatus to be attached to hydraulic machines (referred to in paragraph 3 above) should not exceed the proportion of 100 to 1.

9. In the lever apparatus to be attached to hydraulic machines (referred to in paragraph 3 above) the distance between the two centres of each lever should not be less than four inches in machines for testing up to 100 tons, and not less than eight inches in machines for testing up to 200 tons, and not less than 12 inches in machines for testing up to 300 tons.

10. The length of the knife edges should not be less than at the rate of one inch for every five tons of pressure upon them, and the form of the knife edge should be in conformity with a pattern approved by the Board of Trade.

T. H. Farrer,
Marine Secretary, Board of Trade.

— No. 5. —

Secretary of Lloyd's Register to Secretary, Board of Trade.

(W. 3478.)

Lloyd's Register of British and Foreign Shipping,
2, White Lion-court, Cornhill, E.C.,

16 December 1864.

Sir,

I AM directed to refer to the Report made to the Board of Trade by Messrs. Galloway and Gray, dated 24th October last, a copy of which accompanied your letter of the 3d instant, and which contains remarks on the proving establishment at Poplar belonging to this Society, which have taken the Committee by surprise, they believing, as stated in my letter of the 3d December, that their establishment was second in efficiency to none in the Kingdom.

It appears that the objections taken by your inspectors to the society's machine are twofold: first, to the absence of levers and dead weight sufficient to test the accuracy of the machine, and the strain actually applied; and, secondly, to its capability of testing satisfactorily 75 fathoms of chain at one time.

The first objection will be immediately met by having the necessary lever apparatus supplied, although the Committee have no reason to doubt the accuracy of their machine as indicated by their present scale, it having been proved by levers at the time it was made.

The second question, which is one of principle, requires more consideration. The plan of testing 75 fathoms of chain at one time was not adopted without a full persuasion of its practicability.

Since the receipt of the report above alluded to, however, the Committee have instituted some further proceedings, the result of which has confirmed them in their previous impressions on this point.

I need scarcely say that it is the firm determination of this Committee to have one of the most perfect, if not the most perfect, testing apparatus in the Kingdom; but they are not prepared to abandon a principle which they have inaugurated, and of the soundness of which they are assured.

In this view, therefore, I am instructed to express the Committee's desire that the Board of Trade will nominate any impartial engineers or others, who in their judgment are competent to decide the question, to attend at the works at Poplar, and institute any experiment or series of experiments which will satisfactorily determine the question in dispute.

As the report of Messrs. Galloway and Gray, so damaging to the society's works, has appeared and been commented upon in the public prints, the Committee trust that the Board of Trade see the necessity of no time being lost in determining the efficiency or otherwise of their machine.

I am, &c.
(signed) *Geo. B. Seyfang*, Secretary.

— No. 6. —

Secretary, Board of Trade, to Secretary of Lloyd's Register.

(W 3478.)

Office of Committee of Privy Council for Trade,
Whitehall, 22 December 1864.

Sir,

I AM directed by the Lords of the Committee of Privy Council for Trade to acknowledge the receipt of your letter of the 16th instant, referring to the report made by Messrs. Gray and Galloway, and requesting their Lordships to appoint impartial persons to make experiments on the testing machines belonging to the society of Lloyd's Register at Poplar.

In reply, I am to state that the conditions were not framed without careful consideration and the best advice, and that as at present advised their Lordships can hold out no hope that they will be altered; but I am to add, that out of consideration for the society they are willing to refer any observations the society or their engineer may offer on the subject, to those whom my Lords consider the ablest advisers, viz., Sir W. Armstrong, Mr. Penn, Mr. Wm. Fairbairn; and that if the society still think it necessary to ask them, with the gentlemen who framed the report to the Board of Trade, to visit Poplar and inspect the machines, my Lords have no objection to offer, on the society paying all the expenses.

I am, &c.
(signed) *James Booth.*

— No. 7. —

Secretary of Lloyd's Register to Secretary, Board of Trade.

(W. 3605.)

Lloyd's Register of British and Foreign Shipping,
2, White Lion-court, Cornhill, E. C.,
27 December 1864.

Sir,

I HAVE the honour to acknowledge the receipt of your letter of the 22nd instant, stating, in reference to the society's machine for proving chain cables at Poplar, that the Lords of the Committee of Privy Council for Trade are willing to refer any observations the society or their engineer may offer on the subject, to those whom their Lordships "consider the ablest advisers, viz., Sir W. Armstrong, Mr. Penn, and Mr. W. Fairbairn; and that if the society still think it necessary to ask them, with the gentlemen who framed the report to the Board of Trade, to visit Poplar and inspect the machines, their Lordships have no objection to offer, on the society paying all the expenses."

I am directed to express the Committee's sense of the consideration extended to them by their Lordships as set forth above, and to acquaint you, for their Lordships' information, that the Committee have given instructions for their machine to be fitted with the lever apparatus required by the Board of Trade, and when this has been carried into effect, it will be my duty to communicate with you further on the subject.

I am, &c.
(signed) *Geo. B. Seyfang, Secretary.*

— No. 8. —

Secretary of Lloyd's Register to Secretary, Board of Trade.

(W. 989.)

Lloyd's Register of British and Foreign Shipping,
2, White Lion-court, Cornhill, E. C.,
8 March 1865.

Sir,

REFERRING to my letter dated 16th December last, relating to the proving establishment belonging to the committee of this society, and to Mr. Booth's reply, dated 22nd December, in which he states that if the committee think it necessary

necessary to ask "Sir W. Armstrong, Mr. Penn, and Mr. W. Fairbairn, with the gentlemen who framed the report (in which the society's proving machine is animadverted upon) to visit Poplar, and inspect the machine, the Lords of the Committee of Privy Council for Trade have no objection to offer, on the society paying all the expenses."

I am directed to acquaint you, that the machine in question has now been fitted by Messrs. Maudsley, Field & Company, the eminent engineers, with levers in conformity with the conditions issued by the Board of Trade, and to request that you will move their Lordships to give instructions to the gentlemen indicated by them to attend at the proving-house, and institute such experiments as they may deem necessary to determine the accuracy of the machine, and likewise to demonstrate the practicability, or otherwise, of testing satisfactorily and efficiently chain cables in long lengths, say 60 or 75 fathoms.

I am to add that the Committee will be quite ready to defray all charges which may be incurred in the above-named service.

I have, &c.
(signed) *Geo. B. Seyfang*, Secretary.

— No. 9. —

Secretary of Lloyd's Register to Secretary, Board of Trade.

(W. 1318.)

Lloyd's Register of British and Foreign Shipping,
2, White Lion-court, Cornhill, E. C.

1 April 1865.

Sir,

I AM directed by the Committee of Lloyd's Register of British and Foreign Shipping to refer you to my letter dated the 8th ultimo, the receipt of which has not been acknowledged, and to express their hope that the authorities at the Board of Trade will take steps without further delay to satisfy themselves, by the testimony of the engineers named in Mr. Booth's letter of the 22nd December, or by that of any others in whom they have confidence, as to the accuracy and efficiency of the society's testing machine at Poplar, so that the Committee may be in a position to put themselves right with the public, in contradiction to the injurious report made by the officers of the Board of Trade on the establishment in question.

I am, &c.
(signed) *Geo. B. Seyfang*, Secretary.

— No. 10. —

Secretary, Board of Trade to Secretary of Lloyd's Register.

(W. 989.)

Office of Committee of Privy Council for Trade,
Whitehall, 11 April 1865.

Sir,

I AM directed by the Lords of the Committee of Privy Council for Trade, to acknowledge the receipt of your letter of the 1st instant, and with reference thereto, to inform you that, as stated in the letter from this Board of the 22nd December, my Lords are prepared to refer any observations the society or their engineer may wish to make to those gentlemen, whom my Lords consider the ablest advisers; and that, if it should then appear necessary, my Lords will ask these gentlemen to visit Poplar, and inspect the machine.

My Lords therefore request that you will represent to the Committee that drawings to scale of the 75 fathoms testing machine, with dimensions, will first be required.

These drawings should give all details, from the cylinder to the levers at the end, the position of the rollers, the depth of the bed, &c. &c.

My Lords also desire to be furnished with any further observations, or any report that the Committee or their engineer may wish to submit.

On receiving the documents named above, my Lords will submit them to their advisers before calling upon them to make an inspection. It would be idle, and would cause needless expense and trouble, to request the presence of these gentlemen without first putting them in possession of the whole facts of the case.

I am, &c.
(signed) *T. H. Farrer.*

— No. 11. —

Secretary of Lloyd's Register to Secretary, Board of Trade.

(W. 1671.)

Lloyd's Register of British and Foreign Shipping,
2, White Lion-court, Cornhill, E.C.,
24 April 1865.

Sir,

I DULY received your letter of the 11th instant, relating to the establishment at Poplar for proving anchors and chain cables, belonging to the Committee of Lloyds' Register of British and Foreign Shipping, and requesting, with reference to the Committee's desire, that the Lords of the Committee of Privy Council for Trade would instruct such parties as they have confidence in, to inspect the proving-house in question, and report as to its efficiency, and to the practicability of its proving satisfactorily chains in long lengths of 60 or 75 fathoms, "that drawings to scale of the 75 fathoms testing machine, with dimensions, &c. may be furnished," prior to their Lordships calling upon their advisers to make an inspection of the machine; also that their Lordships may be furnished with any further observations, or any report "that the Committee or their engineer may wish to submit." And I am directed to acquaint you, that instructions have been given for the required drawings to be prepared, and so soon as they are completed they will be forwarded to you, together with the reports which have been obtained from such engineers as have inspected the machine, and given their opinion thereon.

I am, &c.
(signed) *Geo. B. Seyfang, Secretary.*

— No. 12. —

Secretary of Lloyd's Register to Secretary, Board of Trade.

(W. 1912.)

Lloyd's Register of British and Foreign Shipping,
2, White Lion-court, Cornhill, E. C.,
15 May 1865.

Sir,

REFERRING to my letter of the 24th ultimo, I am now directed to forward to you, for the information of the Lords of the Committee of Privy Council for Trade, drawings to scale, illustrative of the Society's Chain-proving Machine at Poplar; also reports, &c., in relation to the same, in fulfilment of the request contained in your communication of the 11th ultimo.

The following is a list of the documents herein referred to; viz.:—

1. An extract from the "Mechanics' Magazine" of the 15th May 1863, descriptive of the machine in question.
2. A letter of introduction of the 26th May 1863, for Mr. F. A. Paget, the Editor of the "Mechanics' Magazine," to view the Society's works.
3. An extract from the "Mechanics' Magazine" of the 19th June 1863, in strong approval of the Society's arrangements.

4. A report

4. A report from Mr. T. M. Gladstone, c.e., the Society's Superintendent, on the conditions issued by the Board of Trade, upon which licenses will be granted.

5. A joint letter from Mr. R. Davison, c.e., and Mr. D. K. Clarke, c.e., in reference to the results of some experiments made under their directions, to prove the practicability of testing satisfactorily chains in long lengths, say 75 fathoms.

6. A report of the experiments adverted to by Messrs. Davison and Clarke.

7. A report from Mr Gladstone, confirmed by Mr. Crossland, c.e., descriptive of some experiments made under the inspection of the Committee of Lloyd's Register of British and Foreign Shipping, to prove the efficiency and correctness of their machine, &c.

8. Copy of a letter, dated 27th March, from Mr. Gladstone to Messrs. Maudsley, Sons & Field, engineers, with inquiries in relation to the practicability of proving chains in lengths of 75 fathoms as efficiently as in shorter lengths.

9. Mr. J. Field's reply.

I may add, that the committee have had these documents printed, not only to afford facility of perusal, but in the expectation that the Lords of the Committee of Privy Council for Trade may desire to place them in the hands of their advisers in the matter at issue. For this purpose I take the liberty of enclosing half-a-dozen copies.

In view of the representation recently made, that the Society's testing machine "had been found to be seriously defective," I am instructed to urge upon their Lordships the great importance of no time being lost in their satisfying themselves on this point.

I am, &c.
(signed) *Geo. B. Seyfang*, Secretary.

Enclosure 1, in No. 12.

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

EXTRACTS, REPORTS, &c., relating to the Society's Establishment at Poplar, for proving Chain Cables and Anchors.

EXTRACT from "Mechanics' Magazine," 15 May 1863.

THE proving house of Lloyd's Committee was erected last year under the superintendence of T. M. Gladstone, c.e., in the New-road, Poplar, contiguous to the West India Docks. Heretofore chain cables have been tested in lengths of 12½ fathoms only for the Navy, and 15 fathoms for the merchant service, these lengths being afterwards connected by shackles up to any length required. Mr. Gladstone prefers, however, to prove from 60 to 75 fathoms at a time, and the proving house, of galvanised iron, is nearly or quite 500 feet long. At the southern end are the offices, weighing machine, hydraulic press, and pumps. A railway extends the whole length of the building, and there is also an iron trough, about 18 inches deep, running the same distance, and in which the cable is placed when under strain. All the mechanical operations of handling and proving chains and anchors are performed by a steam travelling apparatus, designed by Mr. Gladstone, and called the dromedary. This is a substantially made steam crane, mounted upon a four-wheeled truck, and, furthermore, provided with means for its own propulsion as a locomotive, and also for under-running cables, and for driving a set of hydraulic pumps. As a crane, this machine will lift, swing, and lower 10 tons. Stationed near the pumps, and working through a universal joint, it will, in a few minutes, get up any required strain up to 300 tons in a length of 75 fathoms of cable, and in other ways it is so serviceable that but six or seven men, including engine man, smith, and labourers, are employed in the entire work of bringing in a cable or anchor from the docks, and testing, repairing, and delivering it again. The cost of the dromedary, we are informed, is but 650 *l*. The cable is hauled out of a barge afloat by a light windlass, and coiled upon a truck. This is taken by the dromedary into the proving house, and slowly down the line of rails abreast of the trough in which the chain is to be laid for proof. During this journey of the truck, which occupies but a few minutes, over the distance of 450 feet, the cable is let off by the same light windlass, and deposited upon the floor. A large broad-grooved sheave, suspended from the jib of the dromedary, is then got under the cable, and with the sheave properly adjusted in its position, the dromedary under-runs the

the whole length of 75 fathoms in about two minutes, thus hoisting the cable into the trough without its being touched by hand. The trough is nearly or quite 2 feet wide, and has iron sides of a total section of nearly 60 square inches. These are fastened by stout flanges at the bottom to the heads of piles, driven deeply into the "made ground." At every 15 fathoms there is a cross-bar, so that 15, 30, 45, 60, or 75 fathoms may be tested as required, the longer lengths being preferred for convenience. The cable, being made fast at one end to one of the cross-bars of the trough and at the other to the cross-head of the hydraulic press, is ready for testing. The hydraulic press is horizontal, and forms one end of the trough. It has a bore of 16 inches, and a piston rod of 8-inch diameter, the annular area for pressure being thus about 150 square inches. The press cylinder is long enough to allow of a 10 feet stroke. The highest intended pressure is 2 tons per square inch, equal to a total strain of 300 tons, but the 2½-inch cables of a 3,000-ton ship require a proof strain of but 91 tons, and the proof of even the "Great Eastern's" cables is but 167 tons. The permanent friction of the press, which friction is not much affected by the pressure to which it may be worked, is 11 cwt., and it is seldom that a greater pressure than half a ton per square inch requires to be applied by the pumps. The dromedary being run up alongside these, and a universal joint slipped upon the pump-shaft, the pressure is quickly got up. A machine for exactly weighing the strain applied is fixed in a room near by, and from which there is a view of the whole length of the cable. The pressure of the water is received through a small copper pipe upon the end of a gun-metal plunger ¾-inch in diameter, attached to a scale beam provided with moveable weights. The strain is increased until the scale beam rises under the proof weight, when the cable is struck four or five smart blows with a sledge hammer at about the middle of its length. No accidents have yet happened to the workman striking these blows; but we should suggest a falling weight, to be released by a trigger tripped by a long cord. The strain is kept on three or four minutes, during which the cable is carefully examined throughout. When breaks occur it is almost always at a weld, and a large number of links never welded through one-tenth of their cross section have already been found since the proofs commenced last November. A large mooring link made by a first-class firm for the Peninsular and Oriental steamship "Poonah," was broken the other day at an imperfect weld. Many cables go, at every 15-fathom length, almost as soon as the least strain is put on. When the cable breaks in two the broken ends draw apart within the trough, and it is seldom that a fragment of a link flies out, in which case its course is upward, owing to the form of the trough. The roof of the proving house has not yet been hit, however. Broken links, if not too frequent, are welded up again at the owner's expense. The forge for this purpose is mounted upon a light truck, and is thus moved to the work instead of bringing the work to the forge. When the cable has been tested, it is under-run from the trough and coiled upon a truck and taken away by the means already described. The charge for testing, examining, weighing, and certifying chains is 10 s. per ton, with an increased rate for chains under 1 inch. For re-testing, the charge is 5 s. per ton. Anchors are tested at a charge of 10 s. for each arm. Links are repaired at a fixed scale, according to diameter. If a chain will not bear the Admiralty strain on the third testing, a certificate will be given up to within 10 per cent. of the breaking strain if required. The test for an anchor is about two-thirds that for its corresponding cable, and no anchor is certified if the permanent set of one arm exceed ¾-inch. The details of the proving establishment are exceedingly simple and effective, and do much credit to the engineer, Mr. Gladstone.

Enclosure 2, in No. 12.

Office of "The Engineer," 163, Strand, London, W.C.,
26 May 1863.

Dear Sir,

PERMIT me to introduce to you Mr. Paget, of the "Mechanics' Magazine." He would be glad to look over your apparatus for testing cables, and I have no doubt you will afford him the same facilities for this purpose that you kindly afforded to me.

Thomas M. Gladstone, Esq., C.E.

Yours, &c.

Zerah Colburn.

Enclosure 3, in No. 12.

CHAIN CABLES AND ANCHORS.

EXTRACT from "Mechanics' Magazine," 19 June 1863.

AN excellent description of the proving house of Lloyd's Committee, erected last year by T. M. Gladstone, C.E., in the New-road, Poplar, near the West India Docks, will be found in our number for May 15. The description was extracted from a contemporary ("Engineer"). Having lately inspected the works in question, we are enabled, by our own observation, to completely endorse the laudatory observations of our contemporary on the mechanical arrangements of this establishment, designed and erected under the superintendence of Mr. T. M. Gladstone. More than 1,000 tons of chains and anchors have been already tested at the Poplar proving house since the beginning of December last, and there is a daily progressive increase in the number of cables tested. No less than 117 tons of cables, and 12½ tons of anchors were tried last week. As may well be imagined, Mr. Gladstone can

show

show quite a "Museum of Morbid Anatomy" of broken links—a collection containing specimens of the most varied structure and quality of iron. In the great majority of cases a link gives way in the welding; this happens, according to Mr. Gladstone, in nine cases out of ten. The welding is generally made at the side of the link; but when the line breaks in sound iron, one of the ends is almost always sheared out and torn away. As a rule, all chains above 1 inch are welded on the side; the exceptions that occur are through motives of mis-taken economy. We noticed a $1\frac{1}{2}$ -inch link (evidently made of imperfectly-puddled iron), which broke at only 45 tons; the Admiralty proof for this diameter of link is $63\frac{1}{4}$ tons. The breaking strain of good cables, made of No. 3 iron, is about 25 to 28 tons per square inch; this strength appears to get reduced by about one-fifth by being put into the form of the cable; the specimen we noticed, however, thus broke at little more than 8 tons to the square inch. Each cable is of course measured before being brought under the strain of the press, and its permanent elongation is noticed and marked on the certificate. On an average, cables appear to stretch permanently 6 feet in 90 feet. Mr. Gladstone has a pressure indicator in his private office on the first floor, by which means he has a constant check on what is going on down below. This indicator consists of a common Schæffer's gauge, under the pressure of water. It might be objected that it would be difficult to identify a chain that had been tested, and that the certificate given with each tested chain might be used for another which had not undergone the test; or again, that an unprincipled manufacturer might obtain an unlimited number of certificates from the same chain, with the intention of applying these false certificates to untested cables. The system adopted at the proving house completely meets these objections. Each cable is stamped with the date of the test, and in addition there is an ingenious system of private marks, by which the ship surveyors can always identify the chain with its certificate. The position of the marked link is determined by a secret formula which takes the length of chain into account, and any alteration, through accident or design, in the length of the chain, must be marked on its certificate.

Enclosure 4, in No. 12.

ANCHORS, CHAIN CABLES, and TESTING MACHINES.

Mr. Gladstone's REPORT on Minute of the Board of Trade, upon "Anchors, Cables, and Testing Machines," being the general conditions to be complied with by the Owners of Testing Establishments, in order to obtain Licences under the Act.

Clause, No. 1. "The machine shall be constructed to test not more than 15 fathoms at one time.

This restriction is framed upon the principle that, beyond one length of 15 fathoms, the strain is not equal, it being diminished according to increased distance from the force used, therefore undesirable.

As this directly strikes at the practice of Lloyd's machine (the only one ever constructed to test beyond 15 fathoms), it is essential that it be understood.

Reply 1. That there is some small difference may be admitted, but it is inappreciable, as each length of 15 fathoms of chain impinges on a roller, supporting the whole weight between the extremities, and as the Admiralty scale of proof amounts to about ten times the weight of any chain, when at that proof the chain becomes, as it were, one rigid bar, resting with the smallest amount of friction upon each roller. At that proof, the difference does not amount to the effect of one stroke of the pumps on any one part over another. If the contrary were the fact, there would be found to be more fractures at those parts nearest to the force as exerted by the hydraulic ram.

At Lloyd's machine, where in the two years it has been used, tens of thousands of fathoms have been tested, and tons of links and shackles broken, no such result has occurred. No difference whatever has been found between any part, and wherever a weakness from inferior iron or imperfect workmanship has been present, only has the fracture taken place, having no regard to ends or centre of action.

Reply 2. That when testing the qualities of iron, on placing between each chain a short length of bar at the different distances, all being of like size and make, it was found that these did not break at the nearest to the force exerted, but uniformly separated at any indiscriminate point, whether the nearest the centre or the most distant, and at the weakest part of such iron.

Reply 3. That such restriction as to length creates increased work and expense, without concomitant advantage. For one ship's chains, of 300 fathoms, as required by Lloyd's rules, *twenty* proofs would be required instead of *four*, tending to avoid the testing the shackles, which must of necessity be done when several lengths are proved together.

Reply 4. That as it only takes about four minutes to put 75 fathoms into the machine, and four minutes after testing from the machine on to the examining bench, it *will be perceived how great the saving of time when this is done for four times instead of 20 times, in single lengths*. It, therefore, becomes highly important to maintain the power to use the extended length, limited to 75 fathoms, as practised at Lloyd's machine, and which has been found so perfect and economical in practice.

Clause, No. 2. "The cylinder shall be sufficiently long to allow of 15 fathoms of chain being tested, without the necessity for taking a fresh hold to complete the strain."

Reply. That without enquiring why this restriction is required, I have only to state, that having the unusual length of 10 feet of piston-rod, and as the manufacturers see it wise to test their chains before they send them to Lloyd's public test, so as to secure their passing, with the least fault, it has been most unusual to have a second hold upon the chains; therefore this clause does not affect Lloyd's machine.

Clause, No. 3. "The apparatus shall, in addition to the gun-metal plunger, valves, and pressure gauges ordinarily fitted, be provided with levers and dead weight sufficient to test the accuracy of the machine and the strain actually applied to the cable. These levers and dead weight should range to 25 per cent. of the full power of the machine."

Reply. That, although I do not think it necessary, under the present arrangement of Lloyd's machine, if insisted upon, and with the permission of the committee, they might be applied very readily at a moderate cost.

Thos. M. Gladstone, C.E.,
Engineer and Superintendent to Lloyd's Registry
of British and Foreign Shipping.

Lloyd's Proving House,
30 November 1864.

Enclosure 5, in No. 12.

Sir, 1, London-street, E. C., 10 December 1864.
In compliance with your request that we should conduct certain trials, to ascertain if there is any differential value in the testing of chains of various lengths, say from 15 fathoms to 75 fathoms, we beg to state that the effect of these trials was to us quite conclusive, and satisfied us that there was no appreciable variation in the tensile strain throughout the length of the chain under test.

This, to our minds was evident, by the manner in which the experimental links were broken when placed at equal distances throughout the testing chain.

We return your statement of results of the experiments referred to, certified by us.

We are, &c.
(signed) *Robert Davison,*
Member Institute Civil Engineers,
1, London-street, City.
D. K. Clarke,
Member Institute Civil Engineers,
11, Adam-street, Adelphi, W. C.

Enclosure 6, in No. 12.

MINUTE on Testing Links, at different Distances from the Force employed.

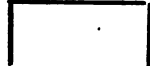
London, 9 December 1864.

Two experiments on 1-inch links placed between—five 15 fathoms of 1½-inch chain for breaking; No. 1 being next the hydraulic ram.

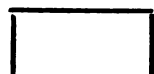
1st. Five links of 1-inch stud.

2d. Five ditto 1-inch open, without studs.


The following is the order in which they stood, and assuming them to be 15 fathoms between each point from ram, at the numbers given.

Hydraulic Ram.  1 15 fathom 2 3 4 5 0 75 fathoms

Order of Breakage, Stud Links.

 3 4 2 1 0 75 fathoms
not broken

Order of Breakage, Open Links.

 3 1 2 4 0 75 fathoms
not broken

The stud links were of best-best Staffordshire iron, and the open links of Thorneycroft & Co.'s best-best Staffordshire iron from one bar of full size. The whole was shown to be of the very highest description of iron, as some, at the fracture, were reduced nearly ¼-inch in diameter.

Billingham,

Billingham, the chain-maker, who made the links, proved his excellent workmanship, as in no case was there found the smallest defect in his welds, so that the links broke out of the solid iron.

The open links were from 10-inch to 10½-inch before proof. After proof, No. 4 not broken, was found to be elongated to 12½ inches.

These experiments were made at Lloyd's proving house, 8th and 9th December 1864.

(signed) *Thomas M. Gladstone, C. E.*

The above certified correct,

(signed) *Robert Davison,*
Member Institute Civil Engineers.

(signed) *D. K. Clarke,*
Member Institute Civil Engineers.

Enclosure 7, in No. 12.

Proving House, Poplar, London, 22 February 1865.

YESTERDAY, the Proving House Committee met at the Proving Establishment, and as the Lever Apparatus, designed and supplied by Messrs. Maudsley, Sons, and Field, was completed and in position at 75 fathoms from the hydraulic ram, they at once proceeded to inspect the same.

In the first place, it was shown that the levers were carefully adjusted, very sensitive and very powerful.

A 1½-inch stud chain having been applied, one end being attached to the levers and the other to the ram, on the force of 16 tons (being the full Admiralty test) being put upon it, *simultaneously* the new levers and the hydraulic steelyard rose, thereby indicating mutual immediate action and a perfect concordance with each other.

Secondly, four 1-inch links (without studs) each 10½ inches long, were placed between several lengths of 150 fathoms of 1½-inch chain; No. 1 being at the end of the first length, or that nearest to the hydraulic force.

When the strain had reached 20 tons (8 tons beyond the Admiralty proof), these four links were examined, and on measurement it was found that they had elongated in the following order:—No. 1 to 10½, 2 to 10 ⅞, 3 to 10 ⅞, 4 to 10½; showing in favour of No. 3. After this, the force was increased until a fracture should take place, when No. 3, or the link at 45 fathoms from the power, gave way, and the point of fracture showed a diminution in diameter of more than one-eighth of an inch.

On examining the three unbroken links, they were found to have stretched, severally, No. 1 to 11½, 2 to 11½, 4 to 11½, showing great distress, and all as being on the point of separation.

Afterwards, the 1½-inch chain was applied to the new levers and hydraulic ram, and again the lever and the steelyard acted with every precision up to 44 tons, when an apparent discrepancy arose of 1½ tons; this, however, upon a more careful trial afterwards, was found to be under 5 cwt., to be accounted for by a link pressing crossways against one of the rollers, but which cannot be deemed any indication of any sensible difference, in action, between the distance of 30 yards and 150 yards, on the Admiralty proof being applied to cables.

At the close of last week, the new levers had been used up to 52 tons at the shorter and longer distances, and were then found to act in like manner in both situations.

These experiments of yesterday were tried under the control of Mr. Crosland, representing Messrs. Maudsley, Sons, & Field, and having his own attention to the hydraulic steelyard, while one of their skilled workmen attended to the levers.

I, therefore, respectfully submit the preceding as a faithful account of these operations, testing a great principle, and which I trust has confirmed my original views, upon which it pleased the Committee to permit my construction of the plant at the Proving House, Poplar, and an answer to the allegations made to the Board of Trade.

(signed) *Thomas M. Gladstone.*

I CAN truthfully confirm the above statement in every particular, having myself carefully conducted the above experiments on behalf of Messrs. Maudsley, Sons, & Field, engineers, and in presence of the Chairman and Proving House Committee of Lloyd's Registry.

(signed) *W. M. Crosland,*
Ass. Inst. C. E.

Lambeth, 23 February 1865.

Enclosure 8, in No. 12.

Messrs. Maudsley, Sons, & Field, Engineers, Lambeth.

Dear Sirs,

Lloyd's Proving House, London, 27 March 1865.

THE Report to the Board of Trade from Messrs. Galloway and Gray on the subject of Chain and Anchor Testing Machines under Mr. Laird's Act, having been printed and published by order of the House of Commons, I am anxious to have from you a reply to the

the following questions, as that report has seriously affected Lloyd's proving house, planned and erected by me as their consulting engineer.

You will, I doubt not, be able to give such answers as facts have determined from the method you adopted and the experiments you made.

First, then, I would ask—

1. Whether, at 15 fathoms distance from the hydraulic force, did not the steelyard of Lloyd's testing machine respond correctly to the motion of the delicate and strong levers of your construction, made and placed for the purpose of the experiment?
2. Whether, when the same were removed to 70 fathoms distance, the like results did or did not take place?
3. Whether, in the shorter or longer length, there was found any such appreciable difference of force, that might interfere with the test of chain cables?
4. Whether, in trying all the intermediate parts by fracture of links or the distress thereon, it was found that there was any discernable difference of strain?
5. Whether it was found that a great part of the force was exerted in raising the chain from the bed or not?
6. Whether, when the 15 fathoms is tested the chain is stretched perfectly tight like the string of a violin, but in 70 fathoms length the chain is never pulled out of the form of a curve, or rather a series of curves or festoons, or whether the deflection is not alike between each 15 fathoms, if the pressure is on one single length, or on the series of lengths?

As these can be answered from your own experiments as taken under the independent direction of your Mr. Field, and of your officers, I am sure you will readily excuse this trouble to fortify the truth and to disperse error. With every consideration, I desire to subscribe myself,

Yours, &c.

(signed) *Thomas M. Gladstone,*

Consulting Engineer and Supt., Lloyd's Proving House, Poplar.

Enclosure 9, in No. 12.

My Dear Sir,

Lambeth, S., 8 April 1865.

I THINK that your letter of the 27th of March may be replied to by answering the three following questions, viz:

Do the hydraulic levers and common levers fitted by us register the same amount of strain?

Are all the links of a chain of the length of 75 fathoms subject to the same amount of strain when tested?

And, is a chain of the length of 75 fathoms, when subjected to the proof-strain, drawn up nearly into a straight line, or does it hang in curves?

In order to answer the first question, some experiments were made with chains of 75 fathoms, of three sizes, $\frac{7}{8}$ -in., $1\frac{1}{8}$ -in., $1\frac{3}{8}$ -in. Both sets of levers were weighted to the proof-strain of the chain tested, when the difference between the two levers was found to be, with the $\frac{7}{8}$ -in. chain 2.9, with $1\frac{1}{8}$ -in. chain 2.5, with $1\frac{3}{8}$ -in. chain, .9 per cent. of the whole strain, showing that for all practical purposes they agreed.

To answer the second, four small gauged 1-in. links were placed at intermediate stations in the chain, when, as you will see from the enclosed detail of the experiment, that they stretched as nearly alike as possible; that the first that broke was one of the intermediate ones, whilst the remainder all showed signs of fracture.

At the proof-strain, with the largest chain, it was found to be not more than $1\frac{1}{2}$ inch out of the straight line at the centre between the 15-fathoms stations, or (3 in 2160).

I have not said anything about the levers at 15 fathoms, because it must be evident that if the levers agree at 75 they must do so at 15. Hoping I have answered your questions satisfactorily, I remain,

Yours, &c.

(signed) *Joshua Field.*

P.S.—I enclose the details of the experiments.

Thomas M. Gladstone, Esq., C.E., &c. &c.

EXPERIMENTS.

	Common Levers.	Lloyd's.	
	Tons.	Tons.	
$\frac{7}{8}$ -in. chain, proof of strain being	18.75	18.35	being 2.9 per cent. too much strain.
$1\frac{1}{8}$ -in. " " "	20	19.75	" 2.5 " "
$1\frac{3}{8}$ -in. " " "	34	33.7	" .9 " "

Experiments

Experiments to show the equality of strain throughout the 75-fathoms length. A gauged link being placed at intermediate stations, No. 1 being next the hydraulic force.

No. 1 -	1-in. link, 10½ -	10½ with 20 tons	11½ with 37 tons	much bent.
No. 2 -	1-in. „ 10½ -	10½ „ „	11½ „ „	
No. 3 -	1-in. „ 10½ -	10½ 1/16 „	broke „	
No. 4 -	1-in. „ 10½ -	10½ „ „	11½ „ „	showed symptoms of fracture.

— No. 13. —

Secretary, Board of Trade, to Secretary of Lloyd's Register.

(W. 1912.)

Office of Committee of Privy Council for Trade,
Whitehall, 22 May 1865.

Sir,

I AM directed by the Lords of the Committee of Privy Council for Trade, to acknowledge the receipt of your letter of the 15th instant, and its enclosures, and to inform you, that the Board of Trade will take immediate steps in the matter.

I am, &c.
(signed) T. H. Farrer.

— No. 14. —

Secretary, Board of Trade, to

Sir W. G. Armstrong, C.E.;
W. Fairbairn, Esq., C.E.;
J. Penn, Esq., C.E.;

J. Hick, Esq., C.E.;
F. A. Paget, Esq., C.E.

(W. 1912.)

Office of Committee of Privy Council for Trade,
Whitehall, 22 May 1865.

Sir,

I AM directed by the Lords of the Committee of Privy Council for Trade to enclose for your information a copy of the general conditions issued by this Board for the guidance of the owners of proving establishments, apparatus, and machinery in applying to this Board for a license under the "Chain Cables and Anchors Act, 1864."

Enclosure No. 1.

More than one of these conditions have been objected to by the engineer in charge of Lloyd's Proving Establishment at Poplar; but there is only one on which there is still a difference between the Committee of Lloyd's Register and the Board of Trade, viz., the condition which requires that the machine shall be constructed to test not more than 15 fathoms at one time.

The Proving Establishment at Poplar, erected before the passing of the Act, is intended to test 75 fathoms at one time. This the engineer attached to the Proving Establishment at Poplar, and the Committee of Lloyd's Register themselves, think to be an improvement over other proving establishments, none of which are constructed to test more than 15 fathoms at one time.

The "Chain Cables and Anchors Act, 1864," provides, that chain cables and anchors tested at a proving establishment licensed by the Board of Trade, "shall be subjected to the same tensile strain as that to which chain cables and anchors respectively of similar size, weight or description, are or shall be subjected, before being received for the use of Her Majesty's Naval Service."

Chain cables, before being received for use in Her Majesty's Naval Service, are subjected for proof to the tensile strain, shown in the table sent herein, in lengths of 12½ fathoms. Cables for the merchant service, however, are made

in lengths of 15 fathoms, and as most testing machines are constructed to test lengths of 15 fathoms, the Board of Trade, in framing its conditions, assumed that the strain applied to a length of 15 fathoms would, for practical purposes, be the same as if applied to lengths of 12½ fathoms.

The engineer attached to Lloyd's Proving House at Poplar and the Committee of Lloyd's Register now wish the condition to be so altered as to enable them to procure a license for their machine which is so made as to test cables in lengths of 75 fathoms.

The Board of Trade conditions were not issued without careful consideration, nor, as you are aware, until the opinion of competent engineers was obtained, and as at present advised, the Board of Trade cannot allow those conditions to be departed from; out of consideration, however, for such a body as the Committee of Lloyd's Register, the Board of Trade have consented again to submit the question for the consideration of yourself and of the other gentlemen by whose advice the conditions were framed. In addition to the copy of the conditions above mentioned, copies of the following papers are enclosed, viz.:

1. A copy of "The Chain Cables and Anchors Act, 1864" (Inclosure No. 2).
 2. Tables and the scale of proofs to which anchors and cables are subjected before being received for use in Her Majesty's Naval Service (Inclosure No. 3).
 3. A report made to the Board of Trade by Mr. Robert Galloway, and Mr. Thomas Gray on the 24th October 1864 (Inclosure No. 4).
 4. A copy of a letter, and its enclosures from the Committee of Lloyd's Register, containing reports and arguments in favour of testing cables in lengths of 75 fathoms (Inclosure No. 5).
- In conjunction with yourself the Board of Trade propose to consult the following gentlemen, viz., Mr. Fairbairn, Mr. Hick, Mr. John Penn and Mr. Paget, and in again submitting the case for their consideration, they have included Mr. Hawkshaw.

Should you, before expressing a further opinion on the subject, wish to visit the proving house at Poplar in company with the other gentlemen to whom the papers have now been submitted, the Board of Trade will, on hearing from you to that effect, make arrangements for the purpose, and instruct their inspector, Mr. Galloway, to give you any assistance in his power.

This Board will be obliged if you will give this matter your early attention. Any charges you may have to make will be paid by this Board.

(signed) *T. H. Farrer.*

Enclosure 1, in No. 14.

For Enclosure 1, in No. 14, see Enclosure 2, in No. 4.

Enclosure 2, in No. 14.

ANNO VICESIMO]SEPTIMO & VICESIMO OCTAVO VICTORIÆ REGINÆ.

CAP. XXVII.

An Act for regulating the Proving and Sale of Chain Cables and Anchors. [23d June 1864.]

WHEREAS it is essential, for the better security of lives and property afloat in sea-going ships, to make provision for the proper testing of chain cables and anchors: Be it therefore enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

1. Any corporation, public body, or company may erect and maintain proving establishments, apparatus, and machinery suitable for the testing of chain cables or anchors, and may, notwithstanding the provisions of any previous Act limiting the amount of money to be raised by such corporation or public body, or company, raise money for that purpose by way of loan, secured by mortgage of such establishments, apparatus, and machinery and

Power to Corporations, &c. to provide proving establishments for testing chain cables, &c.

and of the income to be derived therefrom, or of other property of such corporation, public body, or company; provided always as follows:—

(1.) Nothing in this Act shall relieve any corporation or public body from the necessity of obtaining for any borrowing by them under this Act the consent of any authority or person whose consent is by law requisite to any borrowing by them otherwise than under this Act.

(2.) Where the consent of any authority or person is not by law requisite to any borrowing by any corporation or public body otherwise than under this Act the consent of the Commissioners of Her Majesty's Treasury to any borrowing by that corporation or public body under this Act is hereby made requisite.

(3.) Nothing in this Act shall empower any company to borrow money under this Act otherwise than in such manner and subject to such restrictions as are prescribed in relation to any borrowing by them for purposes other than the purposes of this Act, and if none are prescribed, then in such manner and under such restrictions as may be prescribed by resolutions of the company adopted by three-fifths at least of the votes of the shareholders of the company present (personally or by proxy) at a general meeting of the company specially convened for the purpose.

(4.) Any mortgage or charge created or to be created under any power existing at the passing of this Act on any property of any such corporation, public body, or company, other than such establishments, apparatus, and machinery as aforesaid, shall have priority over any mortgage created under the powers of this Act on the same property.

2. The Lords of the Committee of Privy Council appointed for the consideration of matters relating to trade and foreign plantations, hereafter in this Act called the Board of Trade, may from time to time grant to any corporation, public body, or company, person or persons erecting any proving establishment, apparatus, and machinery suitable for the testing of chain cables or anchors, licence to test chain cables and anchors under this Act, and the Board may suspend or revoke any licence so granted, if the Board shall see occasion; and the expression "tester" in this Act applies to every corporation, public body, or company, person or persons to whom such licence shall be granted, so long as such licence continues in force: provided, that such a licence shall not be granted in any case unless and until the proving establishment, apparatus, and machinery erected have been inspected by an inspector appointed as by this Act provided, and have been certified by him as proper and efficient for their purposes.

Power to the Board of Trade to grant licences for proving chain cables and anchors, and may suspend or revoke licences.

3. The Board of Trade shall, as soon after the passing of this Act as the services of an inspector for the purposes of this Act appear to them to be required, and afterwards from time to time as vacancies occur, appoint a fit person to act as inspector of proving establishments, apparatus, and machinery under this Act, and may from time to time, at pleasure, remove from his office any person so appointed; and such inspector shall, in the execution of his duties, conform to any Regulations from time to time made by the Board of Trade.

Board of Trade to appoint inspectors from time to time.

4. Any licence granted as aforesaid shall be renewable annually, and the same shall not in any case be renewed in any year unless and until the proving establishment, apparatus, and machinery in respect whereof such licence was granted have been inspected by the inspector within that year, and have been certified by him as proper and efficient for their purposes.

Licences to be renewed annually.

5. On the original grant of every such licence, and on every annual renewal of every such licence, there shall be paid such fee not exceeding fifty pounds as the Board of Trade from time to time appoint; all such fees to be paid to the Board of Trade, and to be by them paid into the receipt of Her Majesty's Exchequer, and to be carried to and form part of the Consolidated Fund of the United Kingdom.

Fees payable on licences.

6. The inspector shall receive such salary and allowances as may from time to time be directed by the Board of Trade, with the consent of the Commissioners of Her Majesty's Treasury, out of money to be provided by Parliament for the purpose.

As to remuneration of inspector.

7. Every tester shall, with all reasonable despatch, subject every chain cable or anchor that shall be brought to the proving establishment of such tester for the purpose of being proved, and (unless the parties interested may otherwise agree) in the order in which such chain cables and anchors respectively shall be so brought, to the same tensile strain as that to which chain cables and anchors respectively of similar size, weight, or description are or shall be subjected before being received for the use of Her Majesty's naval service,* and shall stamp every five fathoms in length of every such chain cable, and also every such anchor, with a stamp or die to be provided for that purpose by the tester, and approved by the Board of Trade, denoting that such chain cable or anchor has been "proved," and which shall bear the mark of the tester.

Tester to test all cables and anchors in proper order, and impress the same with authorised proof mark.

8. Every

* See Tables 1 and 2 in Enclosure 3.

As to charges for testing and affixing proof mark.

8. Every tester may make such charges for the testing and stamping with proof mark any chain cable or anchor as such tester may think fit, not exceeding the scale of charges authorized by the Board of Trade; and such tester shall affix upon some conspicuous part of the proving establishment a table of the charges so authorised to be taken by such tester; and such table shall be painted upon a board or boards in distinct black letters on a white ground, or in white letters upon a black ground, or may be printed in legible characters on paper affixed to such board or boards; and it shall not be lawful for such tester to make any alteration in such table or in any of the charges therein specified, until such alteration shall have been approved by the Board of Trade, and the tester shall have caused notice in writing of the intended alteration to be written or printed on paper, and such paper shall have been, for a period of not less than three months, affixed to such table, so that the same shall be clearly legible by all persons who may consult such table.

Power to tester to detain chain cable, &c.

9. Any tester may detain any chain cable or anchor which shall have been so tested until such charge shall be paid; and if such charge shall not be paid within three months after the testing of such chain cable or anchor, the tester may cause such chain cable or anchor to be sold by auction, and shall out of the purchase money deduct the expenses of such sale, and all other expenses incurred by such tester with respect to such chain cable or anchor, including all lawful charges on the same, and shall pay the surplus thereof (if any), on demand, to the owner of such chain cable or anchor, or to the captain or master of the vessel, or other person on whose application the chain cable or anchor had been tested.

Tester, on application, to give certificate of test.

10. When any tester shall have tested and stamped any chain cable or anchor, such tester shall, if requested by the person on whose application the same was tested, within one month after such testing, make out and deliver, free of charge, to such person a certificate of such testing.

After 1st July 1865 it shall be unlawful for makers and dealers to sell unproved chain cables and anchors.

11. From and after the first day of July One thousand eight hundred and sixty-five, it shall not be lawful for any maker of or dealer in chain cables or anchors to sell or contract to sell for the use of any vessel any chain cable whatever or any anchor exceeding in weight one hundred and sixty-eight pounds, unless such chain cable or anchor shall have been previously tested and duly stamped in accordance with the provisions of this Act; and if any person acts in contravention of this provision he shall for every such offence, upon a summary conviction for the same before a justice of the peace, or in Scotland before any sheriff, justice, or magistrate, be liable to a penalty not exceeding fifty pounds.

Persons committing certain offences deemed guilty of a misdemeanor.

12. If any person shall stamp or assist in stamping any chain cable or anchor with the stamp of any tester, or with a stamp or mark purporting to be the stamp of any tester, without the authority of the tester whose stamp shall have been so used or counterfeited, or with any other stamp or mark, for the purpose or with the intention of passing such chain cable or anchor, or of allowing or assisting in the same being passed as a chain cable or anchor duly tested and stamped under the powers of this Act, or if any person, knowing any such chain cable or anchor to have been so wrongfully marked or stamped as aforesaid, shall sell the same, or shall deliver the same to any person to be taken or used as part of the equipment of any vessel, or if any person shall write out and deliver to any person any certificate or document purporting to be a certificate under this Act, that any chain cable or anchor has been tested and stamped under the provisions of this Act, knowing that the chain cable or anchor referred to in such certificate or document had not been so tested or stamped, every person so offending shall be guilty of a misdemeanor, or in Scotland of an offence, and for every such misdemeanor or offence shall be liable, in the discretion of the court, to be imprisoned for any term not exceeding two years, with or without hard labour, and with or without solitary confinement.

Act not to relieve makers from responsibility.

13. No maker of, or dealer in, chain cables or anchors, shipowner, or other person, shall by reason of this Act, or of anything done thereunder, be relieved from any responsibility in respect of any chain cable or anchor made, sold, or used by him to which, but for this Act, he would have been subject.

Act not to affect Admiralty contracts.

14. Nothing in this Act shall affect any contracts which may be made by the Lords Commissioners of the Admiralty for the supply of any chain cables or anchors to any of Her Majesty's dockyards, or for the use of any of Her Majesty's ships.

Term of Act.

15. This Act shall continue in force to the first day of July One thousand eight hundred and seventy-two, and no longer.

Enclosure 3, in No. 14.

CHAIN CABLES.

SCALE of Proofs showing the Tensile Strain to which Chain Cables are subjected before being received for the use of Her Majesty's Naval Service.

Diameter of Iron of Common Links.	Common Links.		Stay Pins, Weight of each not to exceed.	Weight of 100 Fathoms of Cable, in 8 Lengths, including 4 Swivels and 8 Joining Shackles, not to be exceeded by more than $\frac{1}{10}$ th part.*	Weight by which to be proved equal to 630 lbs. per circular $\frac{1}{16}$ th inch.
	Mean Length, 6 Diameters of the Iron; not to be over more than $\frac{1}{10}$ of a Diameter.	Mean Width, 3·6 Diameters of the Iron; not to be over or under more than $\frac{1}{15}$ th of a Diameter.			
<i>In.</i>	<i>In.</i>	<i>In.</i>	<i>Oz.</i>	<i>Cwt. grs. lbs.</i>	<i>Tons.</i>
2 $\frac{1}{2}$	16 $\frac{1}{2}$	9·9	72	368 0 0	136 $\frac{1}{2}$
2 $\frac{1}{4}$	15	9·0	54·09	300 0 0	112 $\frac{1}{2}$
2 $\frac{3}{8}$	14 $\frac{1}{2}$	8·55	47·3	270 8 0	101 $\frac{1}{2}$
2 $\frac{1}{2}$	13 $\frac{1}{2}$	8·1	40	243 0 0	91 $\frac{1}{2}$
2 $\frac{1}{8}$	12 $\frac{1}{2}$	7·65	33·584	216 8 0	81 $\frac{1}{2}$
2	12	7·2	28	192 0 0	72
1 $\frac{7}{8}$	11 $\frac{1}{2}$	6·75	23	168 3 0	63 $\frac{1}{2}$
1 $\frac{3}{4}$	10 $\frac{1}{2}$	6·3	18·76	147 0 0	55 $\frac{1}{2}$
1 $\frac{5}{8}$	9 $\frac{1}{2}$	5·85	15	126 3 0	47 $\frac{1}{2}$
1 $\frac{1}{2}$	9	5·4	11·81	108 0 0	40 $\frac{1}{2}$
1 $\frac{3}{8}$	8 $\frac{1}{2}$	4·95	9	90 3 0	34
1 $\frac{1}{4}$	7 $\frac{1}{2}$	4·5	6·836	75 0 0	28 $\frac{1}{2}$
1 $\frac{1}{8}$	6 $\frac{1}{2}$	4·05	4·983	60 3 0	22 $\frac{1}{2}$
1	6	3·6	3·5	48 0 0	18
$\frac{7}{8}$	5 $\frac{1}{2}$	3·15	2·844	36 3 0	13 $\frac{1}{2}$
$\frac{3}{4}$	4 $\frac{1}{2}$	2·7	1·478	27 0 0	10 $\frac{1}{2}$
$\frac{1}{2}$	4	2·475	1·187	22 2 21	8 $\frac{1}{2}$
$\frac{1}{4}$	3 $\frac{1}{2}$	2·25	·854	18 3 0	7
$\frac{1}{8}$	3	2·025	·622	15 0 21	5 $\frac{1}{2}$
$\frac{1}{16}$	3	1·8	·437	12 0 0	4 $\frac{1}{2}$
$\frac{1}{32}$	2 $\frac{1}{2}$	1·575	·293	9 0 21	3 $\frac{1}{2}$

* The tensile strain is applied to each of the 8 lengths separately, and not to the whole length of 100 fathoms at one time.

ANCHORS.

SCALE of Proofs showing the Tensile Strain to which Anchors are subjected before being received for the use of Her Majesty's Naval Service.

TEST of ANCHORS in Tons, proportioned to their Weight in Cwts.

Weight.	Test.	Weight.	Test.	Weight.	Test.	Weight.	Test.
<i>Cwt.</i>	<i>Tons.</i>	<i>Cwt.</i>	<i>Tons.</i>	<i>Cwt.</i>	<i>Tons.</i>	<i>Cwt.</i>	<i>Tons.</i>
100	67 $\frac{1}{2}$	75	56 $\frac{1}{2}$	50	42 $\frac{1}{2}$	25	24 $\frac{1}{2}$
99	66 $\frac{1}{2}$	74	55 $\frac{1}{2}$	49	41 $\frac{1}{2}$	24	23 $\frac{1}{2}$
98	66 $\frac{1}{2}$	73	55 $\frac{1}{2}$	48	41 $\frac{1}{2}$	23	23 $\frac{1}{2}$
97	66 $\frac{1}{2}$	72	54 $\frac{1}{2}$	47	40 $\frac{1}{2}$	22	22 $\frac{1}{2}$
96	65 $\frac{1}{2}$	71	54 $\frac{1}{2}$	46	39 $\frac{1}{2}$	21	21 $\frac{1}{2}$
95	65 $\frac{1}{2}$	70	53 $\frac{1}{2}$	45	39 $\frac{1}{2}$	20	20 $\frac{1}{2}$
94	65	69	53 $\frac{1}{2}$	44	38 $\frac{1}{2}$	19	19 $\frac{1}{2}$
93	64 $\frac{1}{2}$	68	52 $\frac{1}{2}$	43	37 $\frac{1}{2}$	18	19
92	64	67	52 $\frac{1}{2}$	42	37 $\frac{1}{2}$	17	18 $\frac{1}{2}$
91	63 $\frac{1}{2}$	66	51 $\frac{1}{2}$	41	36 $\frac{1}{2}$	16	17 $\frac{1}{2}$
90	63 $\frac{1}{2}$	65	51	40	35 $\frac{1}{2}$	15	16 $\frac{1}{2}$
89	62 $\frac{1}{2}$	64	50 $\frac{1}{2}$	39	35 $\frac{1}{2}$	14	15 $\frac{1}{2}$
88	62 $\frac{1}{2}$	63	50	38	34 $\frac{1}{2}$	13	14 $\frac{1}{2}$
87	61 $\frac{1}{2}$	62	49 $\frac{1}{2}$	37	33 $\frac{1}{2}$	12	13 $\frac{1}{2}$
86	61 $\frac{1}{2}$	61	48 $\frac{1}{2}$	36	33 $\frac{1}{2}$	11	12 $\frac{1}{2}$
85	61	60	48 $\frac{1}{2}$	35	32 $\frac{1}{2}$	10	12
84	60 $\frac{1}{2}$	59	47 $\frac{1}{2}$	34	31 $\frac{1}{2}$	9	11 $\frac{1}{2}$
83	60	58	47 $\frac{1}{2}$	33	30 $\frac{1}{2}$	8	10 $\frac{1}{2}$
82	59 $\frac{1}{2}$	57	46 $\frac{1}{2}$	32	30 $\frac{1}{2}$	7	9 $\frac{1}{2}$
81	59	56	46	31	29 $\frac{1}{2}$	6	8 $\frac{1}{2}$
80	58 $\frac{1}{2}$	55	45 $\frac{1}{2}$	30	28 $\frac{1}{2}$	5	7 $\frac{1}{2}$
79	58 $\frac{1}{2}$	54	44 $\frac{1}{2}$	29	27 $\frac{1}{2}$	4	6 $\frac{1}{2}$
78	57 $\frac{1}{2}$	53	44 $\frac{1}{2}$	28	27 $\frac{1}{2}$	3	5 $\frac{1}{2}$
77	57 $\frac{1}{2}$	52	43 $\frac{1}{2}$	27	26 $\frac{1}{2}$	2	4 $\frac{1}{2}$
76	56 $\frac{1}{2}$	51	43	26	25 $\frac{1}{2}$	1	3 $\frac{1}{2}$

Note.—The strain is applied on the arm or on the palm at a spot which, measured from the extremity of the bill, is one-third of the distance between it and the centre of the crown.

CORRESPONDENCE RELATING TO

Enclosure 4, in No. 14.

For Enclosure 4, in No. 14, *see* Enclosure 1, in No. 4.

Enclosure 5, in No. 14.

For Enclosure 5, in No. 14, *see* Enclosures 1 to 9, in No. 12.

— No. 15. —

Secretary, Board of Trade, to *J. Hawkshaw*, Esq., F.R.S.
(W. 1912.)

Office of Committee of Privy Council for Trade,
Whitehall, 22 May 1865.

Sir,

I AM directed by the Lords of the Committee of Privy Council for Trade to enclose for your information a copy of the general conditions issued by this Board for the guidance of the owners of proving establishments, apparatus, and machinery, in applying to this Board for a licence under the "Chain Cables and Anchors Act, 1864."

More than one of these conditions have been objected to by the engineer in charge of Lloyd's proving establishment at Poplar, but there is only one in which there is still a difference between the Committee of Lloyd's Register and the Board of Trade, viz., the condition which requires that the machine shall be constructed to test not more than 15 fathoms at one time.

The proving establishment at Poplar, erected before the passing of the Act, is intended to test 75 fathoms at one time. This the engineer attached to the proving establishment at Poplar and the Committee of Lloyd's Register themselves think to be an improvement over other proving establishments, none of which are constructed to test more than 15 fathoms at one time.

The "Chain Cables and Anchors Act, 1864," provides that chain cables and anchors tested at a proving establishment licenced by the Board of Trade "shall be subjected to the same tensile strain as that to which chain cables and anchors respectively of similar size, weight or description are or shall be subjected, before being received for the use of Her Majesty's naval service."

Chain cables, before being received for use in Her Majesty's naval service, are subjected for proof to the tensile strain, shown in the table sent herein in lengths of 12½ fathoms, and cables for the merchant service moreover are made in lengths of 15 fathoms, and as most testing machines are constructed to test lengths of 15 fathoms, the Board of Trade, in framing its conditions, assumed that the strain applied to a length of 15 fathoms would, for practical purposes, be the same as if applied to lengths of 12½ fathoms.

The engineer attached to Lloyd's proving house at Poplar and the Committee of Lloyd's Register now wish the condition to be so altered as to enable them to procure a licence for their machine, which is so made as to test cables in lengths of 75 fathoms.

The Board of Trade conditions were not issued without careful consideration, nor, as you are aware, until the opinion of competent engineers was obtained; and, as at present advised, the Board of Trade cannot allow those conditions to be departed from.

Out of consideration, however, for such a body as the Committee of Lloyd's Register, the Board of Trade have consented again to submit the question for the consideration of yourself and of the gentlemen named in the margin, by whose advice the conditions were framed.

Sir W. Armstrong.
Mr. Fairbairn.
Mr. John Penn.
Mr. Hick, of Bolton.
Mr. Paget.

In addition to the copy of the conditions above mentioned, copies of the following papers are enclosed, viz.,

1. A copy of the "Chain Cables and Anchors Act, 1864."
2. Tables and the scale of proofs to which anchors and cables are subjected before being received for use in Her Majesty's naval service.
3. A Report made to the Board of Trade by Mr. Robert Galloway and Mr. Thomas Gray on the 24th October 1864.
4. A copy of a letter and its enclosures from the Committee of Lloyd's Register containing reports and arguments in favour of testing cables in lengths of 75 fathoms.

In

In conjunction with yourself, the Board of Trade propose to consult the gentlemen named above.

Should you, before expressing an opinion on the subject, wish to visit the proving house at Poplar in company with these gentlemen, the Board of Trade will, on hearing from you to that effect, make arrangements for the purpose, and instruct their inspector, Mr. Galloway, to give you any assistance in his power.

This Board will be obliged if you will give this matter your early consideration. Any charges you may have to make will be paid by this Board.

I am &c.
(signed) *T. H. Farrer.*

Enclosures 1 to 5, in No. 15, were similar to Enclosures in No. 14.

— No. 16. —

W. G. Armstrong, Esq., c. E.; W. Fairbairn, Esq., c. E.; John Hawkshaw, Esq., c. E.; John Penn, Esq., c. E.; F. A. Paget, Esq., c. E.; to Secretary, Board of Trade.

(W. 2133.)

Sir,

London, 31 May 1865.

In conformity with your instructions of the 22d instant, we have examined the machine for testing chain cables at Lloyd's Proving House, Poplar, and have arrived at the following conclusions :

1. That every testing machine should have a hydraulic cylinder with a length of stroke fully equal to the maximum stretch of the lengths of new chain to be tested.

2. That this rule would require an alteration in the machine used by Lloyd's

3. That though we do not consider it impracticable to test chains in lengths of 75 fathoms, yet we consider it necessary that there should be some well defined limit of length, and, on a careful consideration of the whole matter, we are of opinion that, under present circumstances, the best limit for adoption is that of 15 fathoms.

We have, &c.
(signed) *W. G. Armstrong,
Wm. Fairbairn,
John Hawkshaw,
John Penn,
F. A. Paget.*

— No. 17. —

Secretary, Board of Trade, to Secretary of *Lloyd's* Register.

(W. 2133.)

Office of Committee of Privy Council for Trade,
Whitehall, 8 June 1865.

Sir,

WITH reference to my letter of 22nd ultimo, stating that this Board would take immediate steps for the purpose of submitting to their advisers the objections raised by your engineer to the general conditions issued by this Board under the "Chain Cables and Anchors Act," I am directed by the Lords of the Committee of Privy Council for Trade to inform you that the case has been again submitted, with the papers forwarded in your letter, to the gentlemen named in the margin.

Sir W. Armstrong.
Mr. W. Fairbairn.
Mr. Hick.
Mr. Hawkshaw.
Mr. John Penn.
Mr. Paget.

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D

Mr. Hick's

Mr. Hick's reply has not yet been received, but a copy of the reply of the other gentlemen is enclosed.

The opinions now given are, as will be seen by the Committee, thus in accordance with the general conditions issued by this Board, and under those circumstances my Lords have no doubt that the Committee will see the propriety of so altering the machine at Poplar as to make it comply with those conditions. The fee to the gentlemen named is 30 guineas each. I have therefore to beg that the Committee will have the goodness to forward a cheque for the sum of 150 guineas.

I am, &c.
(signed) *T. H. Farrer.*

— No. 18. —

Secretary, Board of Trade, to

Sir W. G. Armstrong, C.E.;
W. Fairbairn, Esq., C.E.;
J. Hawkshaw, Esq., F.R.S.;

J. Penn, Esq., C.E.;
F. A. Paget, Esq., C.E.

(W. 2133.)

Office of Committee of Privy Council for Trade,
Whitehall, 8 June 1865.

Sir,

I AM directed by the Lords of the Committee of Privy Council for Trade to acknowledge the receipt of a report signed by yourself, Sir W. Armstrong, Wm. Fairbairn, Esquire, John Hawkshaw, Esquire, F.R.S., John Penn, Esquire, F. A. Paget, Esquire, on the subject of Lloyd's Proving House at Poplar. I am to thank you for the promptness with which you have given the subject your consideration, and to enclose an order on Her Majesty's Paymaster General for the sum of 30 guineas.

I am, &c.
(signed) *T. H. Farrer.*

— No. 19. —

John Hick, Esq., to Secretary, Board of Trade.

(W. 2153.)

Sir,

Soho Iron Works, Bolton, 1 June 1865.

I HAVE the honour to acknowledge receipt of your favour of 22d ultimo, with certain papers relative to the proving of chain cables, and I have also received a copy of same, bearing date 31st May.

I am sorry that owing to my absence from home you have not had an earlier acknowledgment of the receipt of these papers.

At present, I do not see any reason for giving a different opinion to my former one as to the conditions proposed by the Board of Trade; but I shall be glad to visit the proving house at Poplar, with the other gentlemen named in the commission, if you think it desirable.

I am, &c.
(signed) *John Hick.*

— No. 20. —

Secretary, Board of Trade, to *John Hick, Esq.*

(W. 2153.)

Office of Committee of Privy Council for Trade,
Whitehall, 6 June 1865.

Sir,

I AM directed by the Lords of the Committee of Privy Council for Trade to acknowledge the receipt of your letter of the 1st instant, stating that you would be glad to visit the proving machine at Poplar, if thought desirable, and in reply

reply I am to inform you, that as you were not to be found, and as the gentlemen named in this Board's letter of the 22d ultimo, had pressing business which prevented their remaining in town, they proceeded to inspect the establishment at Poplar, and have made a report, a copy of which is enclosed.

My Lords regret that you were unable to attend; but it seems to them needless to give you any further trouble in the matter.

I am, &c.
(signed) *T. H. Farrer.*

— No. 21. —

J. Hick, Esq., to Secretary, Board of Trade.

(W. 2227.)

Sir,

Soho Iron Works, Bolton, 8 June 1865.

I HAVE the honour to acknowledge receipt of your favour of the 6th instant. I am sorry I had not an opportunity of visiting the proving house at Poplar on the occasion referred to in your letter; but I beg to say I quite concur in the opinion given by the other gentlemen of the commission.

I am, &c.
(signed) *John Hick.*

— No. 22. —

Secretary, Board of Trade, to Secretary of Lloyd's Register.

(W. 2227.)

Sir,

Board of Trade, Whitehall, 12 June 1865.

WITH reference to this Board's letter of the 7th instant, enclosing the opinion of Sir William Armstrong and others on the testing machine at Poplar, I am directed by the Board of Trade to transmit to you the accompanying copy of a letter from Mr. John Hick, stating his concurrence with the opinion expressed by those gentlemen.

I am, &c.
(signed) *T. H. Farrer.*

Enclosure in No. 22.

SOHO IRON WORKS.

(W. 2227.)

R. Galloway, Esq.

Dear Sir,

Bolton, 8 June 1865.

ON my return from a journey I find your favour of the 5th instant, for which I am much obliged.

I quite concur in the opinion given by the other gentlemen forming the commission on the anchor and cable question, although I have not yet had an opportunity of visiting the proving house at Poplar, but will take an early opportunity of doing so.

Board of Trade, Whitehall, London.

I am, &c.
(signed) *John Hick.*

— No. 23. —

Secretary of Lloyd's Register to Secretary, Board of Trade.

(W. 2337.)

Lloyd's Register of British and Foreign Shipping,
2, White Lion-court, Cornhill, E.C.,

19 June 1865.

Sir,

I AM directed to acknowledge the receipt of your letters, dated 8th and 12th instant, transmitting copy of a Report made on the Society's Chain and Anchor Proving

Sir W. Armstrong, Proving Machine at Poplar, by the engineers named in the margin; also copy of
 Mr. W. Fairbairn. a letter from Mr. Hick, of Bolton, concurring in the report alluded to.
 Mr. Hawkshaw.
 Mr. John Penn.
 Mr. Paget.

In face of the opinion therein expressed, the Committee feel that it would be improper in them to contest further the conditions issued by the Board of Trade for the government of testing machines under the Chain and Anchor Act; and they will therefore give instructions for the levers, which are at present fixed at the 75-fathom distance from the hydraulic machine, to be removed to the 15-fathom length, and fixed there to the satisfaction of the Board of Trade inspector, and they conclude that this is all that is necessary to entitle the machine in question to be licensed under the Act.

The Committee have felt less hesitation in arriving at this conclusion, from the fact that the Report states that the engineers who sign it "do not consider it impracticable to test chains in lengths of 75 fathoms," a principle for which alone the Committee felt it necessary to contend; but as a compliance with the requisitions issued by the Board of Trade will preclude them from the use of many economical arrangements which their present practice affords, the immediate effect must be a large increase in their scale of charges.

I enclose, as requested, a draft for 157 l. 10 s., the charge made for the Report, the receipt of which I request may be acknowledged.

I am, &c.
 (signed) *G. B. Seyfang*, Secretary.

— No. 24. —

Secretary of Lloyd's Register to Secretary, Board of Trade.

(W. 2692.)

Lloyd's Register of British and Foreign Shipping,
 2, White Lion-court, Cornhill, E.C.,
 12 July 1865.

Sir,

WITH reference to your letter of the 12th ultimo, respecting the dies or stamps to be adopted for chains and anchors which have been tested at machines licensed by the Board of Trade, I am directed to send you the accompanying copy of the designs for the proof marks proposed to be used at the Society's proving house at Poplar, and shall feel obliged by your apprising me if they meet with the approval of the Board of Trade.

I am, at the same time, to acquaint you that alterations have, in furtherance of the regulations issued by the Board of Trade, been made at the Society's machine, which I am informed have been inspected by Mr. Galloway; and, as it is important that no time should be lost in obtaining a license for the machine under the Chain and Anchor Act of 1864, I am instructed to request you will take an early opportunity to move the Board of Trade to grant a license in this case.

I am, &c.
 (signed) *G. B. Seyfang*, Secretary.

— No. 25. —

Secretary, Board of Trade, to Secretary of Lloyd's Register.

(W. 2692.)

Sir,

Board of Trade, Whitehall, 15 July 1865.

I AM directed by the Board of Trade to acknowledge receipt of your letter of the 12th instant, transmitting a design for a proof mark, proposed to be used at Lloyd's Proving House, at Poplar, and I am to inform you that this Board approve of the design in question.

I am at the same time to state, that Mr. Galloway is at present absent from London on a tour of inspection; but that as soon as he has completed his present arrangements he will receive instructions to inspect the apparatus at Poplar. When his certificate has been received this Board will be enabled to grant a license under the new Act.

I am, &c.
 (signed) *T. H. Farrer*.

— No. 26. —

Secretary of Lloyd's Register, to Secretary Board of Trade.

(W. 2852.)

Lloyd's Register of British and Foreign Shipping,
2, White Lion-court, Cornhill, E.C.,
21 July 1865.

Sir,

I **BEG** to acknowledge the receipt of your letter of the 15th instant, in regard to the proof mark proposed to be used at the proving-house of this society at Poplar, and the granting of a license for the same, under the new Act, and to acquaint you that your communication has been laid before the Committee.

I am, &c.
(signed) *G. B. Seyfang*, Secretary.

— No. 27. —

Secretary, Board of Trade, to Secretary of Lloyd's Register.

(W. 3075.)

Office of Committee of Privy Council for Trade,
Whitehall, 15 August 1865.

Sir,

I **AM** directed by the Board of Trade to enclose a copy of a report received from the inspector of proving establishments, apparatus, and machinery, respecting the establishment at Poplar; and I am to suggest that directions may be given for fitting the second machine in the establishment with levers, &c., in accordance with the requirements of this Board at as early a date as possible.

I am, &c.
(signed) *W. D. Fane*.

Enclosure 1, in No. 27.

(W. 3075.)

Sir,

9 August 1865.

I **BEG** to inform you that I have this day completed my examination of the testing machine at Lloyd's Proving House, Poplar, and delivered my certificate.

This machine is now complete (with the exception of the indicator to mark the breaking strain), and, in accordance with our requirements, the length having been shortened to 15 fathoms, levers applied to the end of the machine, the bed covered over, more light given to the examining bench, and the *hydraulic lever made to indicate correctly*. I also beg to state, that there is another testing machine in the same house which is not yet fitted with our requirements, and will be a month or two before it is ready for my inspection.

The Secretary, Marine Department,
Board of Trade.

I have, &c.
(signed) *R. Galloway*.

— No. 28. —

(W. 3096.)

CHAIN CABLES AND ANCHORS ACT.
(27 & 28 Vict. cap. 27.)

Number of Machine.

14.

INSPECTOR'S CERTIFICATE.

(A.)

Establishment.

Full Title of Establishment.	Name of Owners; if a Company, state Name of Secretary.	Address of Establishment.
Lloyd's Proving House	G. B. Seyfang, Esq., Secretary.	West India Docks, Poplar, E.

(B.)

Apparatus and Machinery.

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Name of maker of machine?—Dunn & Co. 2. Year when made?—1862. 3. Length of trough or bed?—18½ fms. 4. Whether to test anchors or cables, or both?—Both. 5. Full power to which originally intended to be worked?—800 tons. 6. Power to which now tested?—150 tons. 7. Whether hydraulic or not?—Hydraulic. 8. If not hydraulic, description of power?— 9. If hydraulic, whether piston or plunger machine?—Piston. 10. How is the power applied; by hand, steam, &c.?—Steam. 11. No. of cylinder?—One. 12. Diameter of piston?—16 full inches. 13. Length of cylinder?—10 ft. 10 ins. 14. Number of plungers?— 15. Diameter?— ins. 16. Length of stroke?—123½ ins. 17. No. of pressure gauges?—One. | <ol style="list-style-type: none"> 18. Description?—Hydraulic lever. 19. Indicated pressure in cylinder at full power?— per sq. in. 20. Lever apparatus, by whom fitted?—Maudslay, Sons & Field. 21. Proportion of lever power to full power of machine?—16·66 per cent. 22. Number of levers?—Two. 23. Proportion?—80 to 1. 24. Length of knife edges?—9½ ins. 25. Difference, if any, between indicated pressure of water in cylinder and pull on the levers?— lbs. 26. Is indicator fitted to show the strain at which a chain breaks?—Not yet. 27. Name of maker?— 28. Description?— 29. Is an examining bench fitted in a light place?—Yes. 30. Height?—2 ft. 2 ins. 31. Are proper precautions taken against injury from cables breaking?—Yes. |
|--|--|

(C.)

Inspector's Certificate.

THIS is to certify that on the 9th day of August 1865, I inspected the proving establishment, apparatus, and machinery described in the divisions marked (A.) and (B.) on the other side hereof, and that such proving establishment, apparatus, and machinery are proper and efficient for their purposes.

Dated at London, this 9th day of August 1865.

The Secretary, Board of Trade.

(signed) *R. Galloway*
Inspector.

Note.—When the particulars on the other side hereof have been filled in by the inspector, and the above certificate signed, this form is to be handed to the owner of the machine. The owner of the machine should then fill in the following division, marked (D.), and send the form to the Board of Trade.

(D.)

Owner of Machine to Board of Trade.

I HEREBY request that you will cause a license to be prepared for the testing machine described on the other side hereof, and forwarded to the address given in division (A.).


I have this day remitted to Her Majesty's Paymaster General, Whitehall, London, a cheque for 50 l., crossed to the Bank of England, and have had the number of the machine painted on the several parts, in accordance with the directions contained in the foot-note.*

Dated at 2, White Lion-court, Cornhill, this 9th day of August 1865.

To the Secretary, Board of Trade,

(signed) *Geo. B. Seyfang,*
Secretary.

* *Note.*—The number of the machine will be given by the inspector, and inserted by him on the top right-hand corner of this certificate. This number is to be painted in large white characters in three places, viz., on the cylinder, the bed, and the lever apparatus at the end of the machine, as follows:—

B.  T. No. 14.

The license will be forwarded by the Board of Trade on receipt of this certificate, and on the amount of the fee being remitted to Her Majesty's Paymaster General.

— No. 29. —

Secretary of Lloyd's Register to Secretary, Board of Trade.

(W. 3181.)

Lloyd's Register of British and Foreign Shipping,
2, White Lion-court, Cornhill, E. C.,

16 August 1865.

Sir,

I AM directed to acknowledge the receipt of your letter, dated the 15th instant, enclosing copy of a Report from the Inspector of Proving Establishments, Apparatus, and Machinery, respecting the society's establishment at Poplar, and suggesting that directions may be given "for fitting the second machine in the establishment with levers, &c., in accordance with the requirements of the Board of Trade;" and to acquaint you that orders were given, some weeks since, to Messrs. Maudsley, Son & Field, the engineers, to fit the machine in question with the levers, &c. required, and I trust that they will very shortly be supplied.

I am, &c.

(signed) *Geo. B. Seyfang, Sec.*

— No. 30. —

Secretary, Board of Trade, to Secretary of Lloyd's Register.

(W. 3847.)

Sir,

Board of Trade, Whitehall, 12 October 1865.

I AM directed by the Board of Trade to inclose for the information and consideration of the Committee of Lloyd's Register of British and Foreign Shipping, the accompanying copies of extracts from Reports made to this Board by Mr. R. Galloway, C.E., the Inspector of Proving Establishment, Apparatus, and Machinery, appointed under the "Chain Cables and Anchors Act, 1864."

The statements contained in these extracts appear to this Board to be so serious as to call for careful consideration, as it would appear that certain testing machines approved by the Committee of Lloyd's Register as public machines, have, on subsequent examination by this Board's Inspector, been found to be inaccurate.

I am, &c.

(signed) *J. Emerson Tennent.*

Enclosure 1, in No. 30.

EXTRACTS from the REPORT of Mr. Galloway to the Board of Trade, for the month of June 1865.

June 7.—ATTENDED at the Testing Machine Works, Marsh-street, Bristol, in accordance with arrangement. The Secretary being present, found the contractors busy fixing the machines, pointed out that the knife-edges were not long enough for 120 tons, the power, the Secretary informed me, he required a license for. The workmanship is very rough, but as the Company have not accepted the machine, and the contractor not being willing, I could not make a careful examination.

I gave all necessary information to the Secretary, and promised to call next morning to see the drawings.

This proving-house was originally part of the chain and anchor works, and to make it a public machine according to the views of Lloyd's Committee, the owner has built a wall to separate it from the workshops; the owner, with a few others, forming a company under the title of "The Public Testing Machine Company, Bristol."

Should a chain break when under proof, it must be taken into the works of Messrs. Bell and Daniel to be repaired, and these gentlemen are the only chain and anchor makers in Bristol.

June 8.—Met the Chairman of the Bristol Testing Company; pointed out all the defects and requirements; he proposed to let the contractors finish their work, then send me the drawings, and appoint a time for the inspection.

June 9.—Proceeded to Llanelly; found the machine; was informed it is owned by a blacksmith, who made it; the knife-edges wrong; cannot pull more than three feet at once; proceeded to the office of Mr. Jones, the clerk to the Commissioners; that gentleman being from home, called upon Mr. Brown, and arranged to meet him and the maker of the machine at the proving house in the morning, at 9 a.m.

June 12.—*F. Carr*, Newcastle.

"Dear Sir,

"The Board of Trade have forwarded to me the letters and tracings you sent in; respecting the testing machines at Low Walker, I lose no time in pointing out a very serious error, viz.,—on the tracing it is stated the levers indicate 15 tons; they must indicate 25 per cent. of the full power of the machine; thus, for 300-tons machine, they must indicate 75 tons; and for the 150-ton machine, they must indicate 37½ tons. The machinery cannot be passed in its present condition. I hope to finish here on Thursday, and will come on to Newcastle.

(signed) "R. G."

June 14.—*J. Collins*, Esq., Bristol.

"Dear Sir,

"I have to acknowledge receipt of working drawings of the testing machine at your proving house, and beg to point out that the distance between the centres of each lever must be eight inches for machines of 100 to 200 tons, and not six-and-a-half, as shown on the tracing, and that the knife-edges or bearings are sufficient for an 80-ton machine only, and that for a machine of 120 tons they must be six inches long.

(signed) "R. G."

June 28.—Proceeded to Netherton, by appointment, to meet Mr. Hingley, and to examine the public testing machine there. Found the levers were very badly fitted, also the knife-edges; covering to the machine not ready, in fact every part was wrong; Mr. Bloomer being present, gave directions to have the work set right.

Enclosure 2, in No. 30.

EXTRACTS from the REPORT of *Mr. Galloway* to the Board of Trade, for the month of July 1865.

July 5.—PROCEEDED to Messrs. Baylis, Jones, and Baylis, Wolverhampton; measured the levers, having had straight edges made for that purpose; these levers are not proportioned to the Board of Trade requirements, having been partly constructed before the regulations were issued; found them correct, and delivered certificate—indicate 90 tons. Proceeded to Tipton, testing hydraulic lever, with dead levers and indicator, having the hand-pump fitted; weighted the dead levers, one ton at the time, and marked indicator up to 75 tons; then tested the hydraulic lever, which had been in use to the present time, and found that it indicated 10 per cent. above the Admiralty proof; this machine had been passed by Mr. Gladstone, and approved by Lloyd's Committee as correct, the error of 10 per cent. being the mean, the greatest error being 20 per cent. for small power of 4 to 5 tons.

July 10.—Proceeded to Sunderland; I was informed that only a few days before the Superintendent was nearly killed by a chain breaking, and half a link passed within a few inches of his head, and stuck into the wall; I saw the broken link; yet I had previously been told that no accident had happened, and the cover was "all stupid nonsense." Mr. Lumsden said he would see about the cover, and I promised to call again on Wednesday.

July 11.—Proceeded to Low Walker; covers not fitted; pointed out to the Secretary the necessity of pushing on with the work, as I could not remain in Newcastle more than two or three days; was informed that a chain broke here, a short time ago; part of the broken link struck the hydraulic lever, within a few inches of the man in attendance, and then passed out of the door into the river.

A chain that had been previously blacked was proved at this proving house, examined and forwarded to a ship at Guernsey; a man on board the vessel overhauling the chain discovered a crack in one of the end links, the blacking having shaken out; upon further examination another crack was discovered, partly hid by the blacking; the matter was reported to Lloyd's, the chain sent back to the Tyne, the defective links cut out and re-tested.

Met Mr. Clarke, engineer to the Tyne Company, explained to him the requirements to obtain a temporary license, and also for a regular one.

July 12.—Proceeded to Sunderland, and met the directors by appointment. Covers nearly complete; carefully examined the machines, and tested the hydraulic lever with the dead levers, the result in each case showing a difference of five per cent., the hydraulic levers being that much too light; therefore to the present time the chains have been tested five per cent. under the Admiralty proof; these machines were examined by Mr. Gladstone, and approved by Lloyd's Committee as correct. Delivered certificates.

July 13th.—"Mr. Bloomer—

"Dear Sir,

"I write to inform you that I leave here on Saturday; I shall be glad to know the condition of the Netherton Testing Machine; I think you should take the opinion of an engineer before I again visit it.

(signed) "R. G."

July

July 15th.—A messenger from Mr. Brown (Abbott & Co.) to inform me that the testing machine at his works was complete; and hearing from the secretary of the public machines at Low Walker they would not be ready unless Mr. Brown sent more men, I thought it best to attend to Mr. Brown; I therefore attended, and finding all in order gave my certificate, Mr. Brown informing me that the Low Walker machines should be ready on Monday, and that he had obtained the permission of Lloyd's Committee to prove chain cables at his testing machine until those at Low Walker were ready. The result of the experiments at Mr. Brown's (Abbott & Co.) show that to the present time chain cables and anchors have been proved five per cent. above Admiralty proof."

July 17th.—Proceeded to Low Walker; found the cover was on the machine, but the counterbalance weights were not complete. Tested the machine to 81 tons; found dead weighted levers correct; then examined the hydraulic lever; found it greatly in error, and requested the original calculations to be sent for, when I found the mistake was in that, giving $8\frac{1}{2}$ oz. on end of lever to equal one ton, instead of 6 oz. 14 drams, or about $26\frac{1}{2}$ per cent. above Admiralty proof. This machine had been examined by Lloyd's engineer, and approved by that Committee as correct. The above refers to the cable machine; the anchor machine was not so much in error, the weight on end of lever to represent one ton was 1.671; by their calculations it weighed 1 lb. 12 oz.; it should have been 1.729 or 1 lb. 11 oz. $6\frac{1}{2}$ drams. This machine, like the former one, had been examined and passed by Lloyd's engineer, and received the approval of that Committee.

July 18th.—Proceeded to Low Walker; tested the anchor machine to 60 tons. The different weights for each machine having been correctly adjusted, delivered certificates to the secretary.

July 20th.—Proceeded to Bristol; found the examining bench wrongly constructed. I had on a former visit given proper instructions; but the present arrangement was to meet the wishes of Lloyd's engineer. I requested it should be altered as I at first suggested. The cover to the machine requires chains and counterbalance weights. Attempted to test the machine to 80 tons, but could not get more than 60 tons, the chain breaking at that quantity. Examined the dead weighted levers, found them correct, and in proportion for an 80-tons machine; then examined the hydraulic lever, and found the weight per ton on end of lever was 2 lbs. 9 oz. 6 drams, whereas the weight per ton should have been 2 lbs. 9 oz. 14 drams.

This machine had been examined by Lloyd's engineer, approved by him and Lloyd's Committee, and in addition to the error in the weights, the hydraulic lever was in error to the extent of 5 per cent.

July 21st.—By order of the Board of Trade proceeded to London, to inspect the testing machines at Poplar. Proceeded to Poplar; no person in authority to meet; examined the machines; found the cover to large machine not quite complete, the windows to give light to examining bench not fixed, the small anchor machine not fitted with dead levers. The men were employed testing chain; I asked the reason, and was informed that the chain cables they were testing had been contracted for before the Act came into operation, and that Mr. Wood had orders sufficient to keep one machine going for two years, without a license.

July 22nd.—Proceeded to Lloyd's Proving House, Poplar; again no person to meet me; gave the foreman directions as to testing the machine, and arranged to attend again on Monday.

"Messrs. Maudsley & Co.

"Gentlemen,

"I visited Lloyd's testing machine yesterday, and again to-day, but could not do anything, there being no person in authority to meet me. I propose visiting the machine again on Monday, and shall feel obliged if you will send a person to meet me, as I wish the levers taken down for measurement.

(signed) "R. G."

July 24th.—Proceeded to Lloyd's Proving House as arranged, examined the dead levers; found a slight error in the line of centres of the top lever, which increased the length a one-sixteenth of an inch.

July 25th.—Again attended at Lloyd's Proving House to measure cylinder piston rods and other parts; examined the hydraulic lever, the one all the experiments had been made with; discovered it was wrongly constructed.

July 26th.—Again attended at Lloyd's Proving House; met Mr. Gladstone, Lloyd's engineer; also Mr. Crosland, representing Messrs. Maudsley, Sons and Field; pointed out the error in the hydraulic lever. Mr. Gladstone thought the error of no consequence, although the distance from the power to the fulcrum could be changed at pleasure; but Mr. Crosland agreed with me that the lever was wrongly constructed, that it did not indicate correctly, and that he had before drawn Mr. Gladstone's attention to it. At last Mr. Gladstone arranged for Mr. Crosland to take the lever away, and make it right. The machine is not yet tested; the windows for examining bench not fixed, nor is the cover to machine complete. Mr. Crosland promised to write to me directly the machine was complete.

July 29th.—Liverpool testing machine, found the cover to be finished, and the lights in roof over examining bench. Examined the knife edges of the levers, found they required repairs.

Enclosure 3, in No. 30.

EXTRACTS from the Report of Mr. *Galloway* to the Board of Trade for the Month of August 1865.

August 9th.—Proceeded to Lloyd's proving house, the weights having been altered in accordance with my calculations, Mr. Crosland in taking the correct measurements of cylinder and rod agreed with me exactly. Proved the machine to 150 tons and delivered certificate to Mr. Seyfang. Reported to Board of Trade.

August 15th.—Proceeded to Netherton, to weigh corrected weights, and to test indicator found the weights correct and examined hydraulic lever, found that when tested with dead levers, it was 10 per cent. light, which exactly agreed with my calculations; altered it, so that it now agrees with the dead levers.

Proved the machine to 150 tons, and delivered certificate to Mr. Bloomer. This machine had been passed by Mr. Gladstone, and approved by Lloyd's Committee.

August 16th.—Proceeded to Liverpool to the testing machine there, weighed weights, &c., replaced levers, and proved the machine to 72 tons. Delivered certificate.

This machine had been examined by Lloyds' engineer, and approved by that Committee.

August 18th.—Copy of letter to the engineer, Mersey Dock Board.

"I beg to acknowledge the receipt of your letter referring to the King's Dock testing machine. The reason I made the note on the certificate is in consequence of the printed regulations of the Board of Trade, where it states that a machine shall be long enough to test 15 fathoms of chain in one pull. The three months' license will give you good time to make the alterations, to meet the requirements referred to, and without stopping the work more than a few days. I believe the Board of Trade have the power to grant a temporary license, if not, my certificate will be useless."

August 24.—Met the engineer at the King's Dock machine to decide upon the best mode of lengthening the bed.

Enclosure 4, in No. 30.

EXTRACT from the Report of Mr. *R. Galloway*, C.E., to the Board of Trade for the Month of September 1865.

"I have examined the testing machine at Jersey, and pointed out to the Chairman and Directors the various alterations and additions required; although approved by Lloyd's Committee, the machine does not indicate correctly."

— No. 31. —

Secretary of Lloyd's Register to Secretary Board of Trade.

(W. 3914.)

Lloyd's Register of British and Foreign Shipping,
2, White Lion-court, Cornhill, E.C.,
13 October 1865.

Sir,

I AM in receipt of your letter of the 12th instant, transmitting extracts from Reports made to the Board of Trade by Mr. Galloway, C.E., on proving establishments examined by him, and beg to acquaint you that I will lay the same before the Committee.

I am, &c.
(signed) pro. *Geo. B. Seyfang*,
R. Gillespie.

— No. 32. —

Secretary Board of Trade to Chairman of Lloyd's Register.

(W. 4141.)

Sir,

Board of Trade, Whitehall, 13 November 1865.

WITH reference to the former letter from this Board enclosing copies of reports made by the Inspector of proving establishments, apparatus, and machinery, under the Chain Cables and Anchors Act, I am now directed by the Board of Trade to forward to you, for the information of the Committee, the accompanying copy of a report of the Inspector's survey of the old machine at Poplar, and I am

am to state that this Board have sanctioned the granting of a license for the machine to test anchors; but for the reasons stated in the report they must withhold a license for testing cables.

I am, &c.
(signed) *T. H. Farrer.*

Enclosure in No. 32.

(W. 4141.)

Office of Board of Trade Surveyors, East India Buildings,
5, Lime-street, E.C., 1 November 1865.

Sir,
I HAVE the honour to inform you that I have this day completed the examination of the anchor testing machine at Lloyd's Proving House, Poplar, and delivered the certificate to Mr. Seyfang.

The examination has occupied considerable time on account of the many and very considerable errors in the hydraulic lever, which, before the dead weighted levers were fitted, was the only guide in applying the proof strain.

In the first place, it was found that that lever did not work freely on the knife edge fulcrum; the next error was in the small plunger, the friction of which was so great as to cause an error of several tons; and last, but not least, the weights were incorrect. All these had to be set right, viz., a new knife edge in the lever, a new plunger, and new weights.

The hydraulic lever now acts nearly correctly with the dead-weighted levers, but its original formation prevents any alteration from making it absolutely correct.

This machine was originally the property of Mr. Mitchison, and was, I believe, when in his possession used by Lloyd's Committee to ascertain the strength of single and double rivetted plates, &c. with a view to frame their rules as to the strength of iron ships; whether the errors in the hydraulic lever were then known and allowed for, I am unable to say, but if not allowed for, the experiments on which those rules are founded must have been very incorrect.

I have granted a certificate for the machine to test anchors, but I cannot grant a certificate to test cables, owing to the permanent error above referred to.

The Secretary, Marine Department,
Board of Trade.

I have, &c.
(signed) *R. Galloway.*

— No. 33. —

Secretary Lloyd's Register to Secretary Board of Trade.

(W. 4387.)

Lloyd's Register of British and Foreign Shipping,
2, White Lion-court, Cornhill, E.C.,
17 November 1865.

Sir,

I AM directed to acknowledge the receipt of your letter of the 13th instant, with copy of report made by Mr. Galloway, Inspector to the Board of Trade, on the machine No. 15, at Poplar, for proving anchors, and to acquaint you that your communication will receive the Committee's attention.

I am, &c.
(signed) *G. B. Seyfang, Sec.*

— No. 34. —

CHAIN CABLES AND ANCHORS ACT.
(27 & 28 Vict. cap. 27.)

INSPECTOR'S CERTIFICATE.

(A.)

Establishment.

Full Title of Establishment.	Name of Owners; if a Company, state Name of Secretary.	Address of Establishment.
Lloyd's Proving House, West India Docks, Poplar.	G. B. Seyfang, Esq., Secre- tary.	Lloyd's Proving House, Poplar.

Number of Machine.

15

(B.)

Apparatus and Machinery.

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Name of maker of machine?—Dunn & Co. 2. Year when made?—1855. 3. Length of trough or bed?—16 fms. 4. Whether to test anchors or cables, or both?—Anchors. 5. Full power to which originally intended to be worked?—About 120 tons. 6. Power to which now tested?—75 tons. 7. Whether hydraulic or not?—Hydraulic. 8. If not hydraulic, description of power?— 9. If hydraulic, whether piston or plunger machine?—Piston. 10. How is the power applied; by hand, steam, &c.?—Both. 11. No. of cylinder?—One. 12. Diameter of piston?—11 full inches. 13. Length of cylinder?—8 ft. 1 in. 14. Number of plungers?— 15. Diameter?— ins. 16. Length of stroke?—80 ins. 17. No. of pressure gauges?—One. | <ol style="list-style-type: none"> 18. Description?—Hydraulic lever. 19. Indicated pressure in cylinder at full power?— per sq. in. 20. Lever apparatus, by whom fitted?—Maudslay & Co. 21. Proportion of lever power to full power of machine?—41·6 per cent. 22. Number of levers?—Two. 23. Proportion?—80 to 1. 24. Length of knife edges?—9½ ins. 25. Difference, if any, between indicated pressure of water in cylinder and pull on the levers?— lbs. 26. Is indicator fitted to show the strain at which a chain breaks?— 27. Name of maker?— 28. Description?— 29. Is an examining bench fitted in a light place?— 30. Height?— ft. ins. 31. Are proper precautions taken against injury from cables breaking?— |
|---|---|

(C.)

Inspector's Certificate.

THIS is to certify that, on the 1st day of November 1865, I inspected the proving establishment, apparatus, and machinery described in the divisions marked (A.) and (B.) on the other side hereof, and that such proving establishment, apparatus, and machinery are proper and efficient for their purposes.

Dated at London, this 1st day of November 1865.

The Secretary, Board of Trade.

(signed) *R. Galloway,*
Inspector.

Note.—When the particulars on the other side hereof have been filled in by the inspector, and the above certificate signed, this form is to be handed to the owner of the machine. The owner of the machine should then fill in the following division, marked (D.), and send the form to the Board of Trade.

(D.)

Owner of Machine to Board of Trade.

I HEREBY request that you will cause a license to be prepared for the testing machine described on the other side hereof, and forwarded to the address given in division (A.).


I have this day remitted to Her Majesty's Paymaster General, Whitehall, London, a cheque for 30*l.*, crossed to the Bank of England, and have had the number of the machine painted on the several parts, in accordance with the directions contained in the foot-note.*

Dated at 2, White Lion-court, Cornhill, this 3d day of November 1865.

To the Secretary, Board of Trade.



(signed) *Geo. B. Seyfang,*
Secretary.

* *Note* —The number of the machine will be given by the inspector, and inserted by him on the top right-hand corner of this certificate. This number is to be painted in large white characters in three places, viz., on the cylinder, the bed, and the lever apparatus at the end of the machine, as follows:—

B.  T. No. 15.

The license will be forwarded by the Board of Trade on receipt of this certificate, and on the amount of the fee being remitted to Her Majesty's Paymaster General.

STATEMENT showing the Name of each PROVING ESTABLISHMENT licensed under the CHAIN CABLES and ANCHORS ACT; whether such Establishments are conducted by Private Firms, by Individuals, by Joint Stock Companies, or by Public Corporations; the Number and Descriptions of the Machines licensed at each Establishment, and the Proof-marks, approved by the Board of Trade under the Act, for each of such Establishments.

Name of Proving Establishment.	OWNERS.	Whether a Private Firm, or Individual, or a Joint Stock Company, or Public Corporation.	Number of License.	DESCRIPTION OF MACHINERY.					Proof-Mark, approved by Board of Trade.
				Whether Hydraulic or otherwise.	Power to which Licensed.	Power of Lever Apparatus.	Whether to test Anchors or Cables, or both.		
Millwall Iron Cable Works -	Brown, Lenox & Jones	private firm	1	lever and hydraulic.	Tons. 250	250 tons	both -	B. L.	
Mersey Dock and Harbour Board Chain and Anchor Testing Works.	Mersey Dock and Harbour Board.	Public Cor- poration.	2	hydraulic	200	33 p'ct.	both -	MD. & HB.	
Ditto - - ditto - -	- ditto - - -	- ditto -	3	- ditto -	200	50 „	both -	MD. & HB.	
Ditto - - ditto - -	- ditto - - -	- ditto -	4	gearing -	72	100 „	cables -	MD. & HB.	
Staffordshire Public Chain and Anchor Testing Company (Limited), Tipton.	Staffordshire Public Company.	Joint Stock Company.	5	hydraulic	75	25 „	both -	S. P. T. Co., T.	
Ditto - ditto - Netherton	- ditto - - -	- ditto -	6	- ditto -	150	17.6 „	both -	S. P. T. Co., N.	
Wolverhampton Victoria Chain and Anchor Testing Company (Limited).	Wolverhampton Test- ing Company.	- ditto -	7	- ditto -	90	100 „	both -		
Sunderland Chain and Anchor Testing Company (Limited).	Sunderland Testing Company.	- ditto -	8	- ditto -	81½	13½ „	cables -	P. H. S.	
Ditto - - ditto - -	- ditto - - -	- ditto -	9	- ditto -	60	20 „	both -	P. H. S.	
Messrs. John Abbot & Co. (Li- mited), Park Works, Gates- head-on-Tyne.	John Abbot & Co. (Limited).	- ditto -	10	- ditto -	81	10 „	cables -	A.	
Lloyd's Tyne Public Chain and Anchor Testing Company (Li- mited).	Lloyd's Tyne Public Company.	- ditto -	11	- ditto -	81	5 „	cables -	L. T.	
Ditto - - ditto - -	- ditto - - -	- ditto -	12	- ditto -	60	10 „	anchors -	L. T.	
Bristol Chain and Anchor Test- ing Company (Limited).	Bristol Testing Com- pany.	- ditto -	13	- ditto -	100	30 „	both -	B. T. C.	
Lloyd's Proving House, Poplar -	Lloyd's Register -	Public Cor- poration.	14	- ditto -	150	16.66 „	both -	L. S.	
Ditto - - ditto - -	- ditto - - -	- ditto -	15	- ditto -	75	41.6 „	anchors -	L. S.	
Golds Hill Chain and Anchor Works.	C. Bloomer -	private indi- vidual.	16	- ditto -	100	25 „	both -	C. B.	
Chain and Anchor Works, Row- ley, near Dudley, Stafford- shire.	T. P. Jones -	- ditto -	17	- ditto -	50	25 „	both -	T. P. J.	
Netherton Iron Works, Nether- ton, Staffordshire.	N. Hingley & Sons -	private firm	18	- ditto -	75	25 „	both -	N. H.	
Dee Iron Works, Chester -	Wood Brothers -	- ditto -	20	- ditto -	50	50 „	anchors -	W. B.	
Ditto - - ditto - -	- ditto - - -	- ditto -	21	- ditto -	100	25 „	cables -	W. B.	
Lloyd's Cambrian Chain and Anchor Testing Company (Li- mited).	Lloyd's Cambrian Company.	Joint Stock Company.	22	- ditto -	100	25 „	anchors -		
Ditto - - ditto - -	- ditto - - -	- ditto -	23	- ditto -	150	33 „	cables -	Ditto.	
Newbridge Chain Works, Pon- typridd, Glamorganshire.	Brown, Lenox & Co.	private firm	28	gearing -	50	100 „	both -	B. L.	
Messrs. Mountford & Homer, Cradley Works, near Stour- bridge, Worcestershire.	Mountford & Homer	- ditto -	30	hydraulic	75	100 „	both -	M. & H.	
Public Proving Machine for Anchors and Chain Cables, Gateshead Iron Works, Gates- head-on-Tyne.	Hawks, Crawshaw & Sons.	- ditto -	31	- ditto -	100	100 „	both - (anchors to 5 cwt. only).	H. & C.	

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COPIES of all CORRESPONDENCE between the Board of Trade and the Secretary of Lloyd's Registry of British and Foreign Shipping relating to their Establishment for PROVING CHAIN CABLES and ANCHORS at *Poplar*, and to other Establishments for the same purpose, under their Control or Management; of any CORRESPONDENCE between the Board of Trade and the Engineers called in to report upon the Subject of the *POPLAR PROVING MACHINE*; and, STATEMENT showing the Name of each Proving Establishment Licensed under the CHAIN CABLES and ANCHORS ACT; &c.

(*Mr. Laird.*)

*Ordered, by The House of Commons, to be Printed,
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**COPIES “ of any CORRESPONDENCE between the Engineer or Secretary of
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been sent to the Board of Trade : ”**

**“ Of any CORRESPONDENCE between the Board of Trade and any other Persons
or Bodies on the same subject : ”**

**“ And, of any REPORTS made by the Board of Trade Officers thereon, or as to
PROVING MACHINES Licensed by the Committee of Lloyd’s Register and the
Board of Trade (in continuation of Parliamentary Paper, No. 111, of
Session 1866). ”**

Board of Trade, }
24 May 1866. }

T. H. FARRER.

(Mr. Laird.)

*Ordered, by The House of Commons, to be Printed,
29 May 1866.*

COPIES of CORRESPONDENCE between the Engineer or Secretary of Lloyd's Register and the Board of Trade:—Of REPORTS of ENGINEERS called in by Lloyd's Register, which have been sent to the Board of Trade:—Of CORRESPONDENCE between the Board of Trade and other Persons or Bodies on the same subject:—And, of REPORTS made by the Board of Trade Officers thereon, or as to PROVING MACHINES Licensed by the Committee of Lloyd's Register and the Board of Trade (in continuation of Parliamentary Paper, No. 111, of Session 1866).

— No. 1. —

(W. 2474.)

The Engineer of Lloyd's Register, to the Board of Trade.

Lloyd's Proving House,
West India Dock, New-road, Poplar, E.,
29 May 1865.

Sir,

HAVING had the satisfaction of showing, by the plainest ocular demonstration and practical proof, to Lloyd's Committee of Registry for British and Foreign Shipping, the truthfulness and advantages of the arrangements at Lloyd's Proving House, Poplar, whether to test chains at 15 fathoms lengths (or less), or up to any intermediate lengths to 75 fathoms, forming a complete answer to the allegations and reflections raised by Mr. Galloway and Mr. Gray in their Report to your Honourable Board (dated the 24th October 1864), and having received their congratulations thereon, after a full and searching investigation, I respectfully submit that, as not being one of the sole servants of "Lloyd's Committee" when being their engineer, and superintendent of their proving house, it is due to myself, as a "Civil Engineer;" to justify my work, *i. e.*, the construction and action of Lloyd's Proving Machine, before the world, and to demand, without fear or favour, *an universal approval of the same*, from facts which cannot be mistaken nor misunderstood.

In order to do this it is needful that I should respectfully submit the whole question that has been raised by these gentlemen in their Report to your Honourable Board (one of the highest branches of the Government of the country), and which document, if it had contained the simple facts, must place me and my long experience in hydraulic machinery *very low indeed*, in my repute as a civil engineer; but if it be shown to be based on vague speculative opinions, with some, to my mind, unwarrantable statements, it must have the effect of reversing the scale, and give to both parties those results which should put all concerned where truth and justice must naturally assign them.

I may observe that the moment I was made acquainted with their Report, I demurred to it upon several serious and distinct grounds.

The first of these is the assertion, that the old and generally practiced mode of ascertaining the force exerted and measured by the hydraulic machine, said, in Clause No. 5, to be "liable to great variations from circumstances entirely beyond the control of the person working the machine; and these variations, even supposing that they can be accurately estimated, cannot be ascertained by any process which can be readily applied during the working of the machine," is, in properly constructed machines, totally unfounded; and, secondly, that testing beyond 15 fathoms at one time, deprecated in Clause No. 10, is equally unsound and subversive of progress, which clause is as follows:

"No. 10. The public machine erected for Lloyd's, in London, is spoken of by very many persons with anything but confidence, and by many it is represented as being quite inaccurate; it is spoken of as being just the reverse of the one

one at Tipton—that is said to put too great a strain on, and the one in London too little. The London machine, like the others complained of, is not fitted with levers and dead weight, and no one can, therefore, say what is the actual strain put on the chain. There is, besides, a peculiarity in the machine at London which was specially and frequently mentioned to us. In all other machines that we have seen, a chain cable is tested in lengths of 15 fathoms or less, but at this machine the length tested is 75 fathoms. In attempting to test a cable of this length a great part of the force of the machine is exerted in lifting the chain from the bed. When a 15 fathom length is tested, the chain is stretched perfectly tight, like a string on a violin, but in the 75 fathoms length the chain is never pulled out of the form of a curve, or rather a series of curves or festoons.

“The London machine (Lloyd’s) is provided with a roller at every 15 fathoms along the trough, to assist in raising the chain from the floor of the bed. The chain passes over these rollers, and when the strain is on, hangs in curves from roller to roller, along the whole length (75 fathoms) of the machine.

“Again, a length of new chain of 15 fathoms will stretch from four feet upwards (we have seen a 15 fathom length stretch as much as six feet six inches), so that the cylinder A in the diagram is generally made about eight feet long for a 15 fathom length. To meet the stretching of a chain cable of 75 fathoms, properly tested, the cylinder A ought to be from 25 to 30 feet. The cylinder at Lloyd’s machine, in London, is only 11 feet in length.

“As an additional proof that the strain exerted by all public machines is not alike, an ironmaster at Tipton informed us that he would supply iron in any quantities, guaranteed to pass the London (Lloyd’s) machine, at 10 s. a ton less than he could if it were to pass the machine at Tipton or Birkenhead; and several chain makers informed us that they could afford to sell chain at 10 s. a ton cheaper if they knew it was to pass the London (Lloyd’s) machine, than they could if it were to pass the Birkenhead or Tipton machines, although we understood that the difference in the freight to London was 10 s. a ton more than to Birkenhead, and 15 s. a ton more than to Tipton.”

As your Honourable Board has thought fit to publish such “Report,” and has based certain stringent “preliminary regulations” upon it for machines to obtain licenses under “Laird’s” “Chain Cable and Anchors Act, 1864,” beginning with the article—

“No. 1. The machine shall be constructed to test not more than 15 fathoms at one time,” it is clear that the practice adopted and used *so successfully* at Lloyd’s machine for more than two years must be given up, or a *special permission obtained for it*. And such permission would be due if it can be shown that such extended means of test as to length is (*sic.*) found to be as exact, as *efficacious*, and *more economical* than the limit prescribed by your Honourable Board, viz., to 15 fathoms at one time.

In order to prove this, although by my experiments I had decided the question without difficulty or expense, and, from my reasoning, experience, and reflection, felt satisfied that all these points would be and have been satisfied, as the “Report” demanded such a means of extended test, as not to be less than 25 per cent. upon the working power of the hydraulic machine, Lloyd’s Committee wisely determined that such should be at once constructed by some eminent firm, so as to decide the question. It was, therefore, committed to Messrs. Maudslay, Sons, & Field, to design and plant that which should fully and completely meet the case.

These most experienced engineers at once entered upon the work, altogether independent and unbiassed by me.

The result of this has been given in the following Report to Lloyd’s Committee, confirmed by Mr. Crossland on behalf of Messrs. Maudslay, Sons, & Field, and subsequently by Mr. Field:—

COPY of a REPORT to Lloyd’s Committee.

Sir,

London, 22 February 1865.

YESTERDAY the Proving House Committee met at the Proving Establishment; and as the “lever apparatus” designed and supplied by Messrs. Maudslay, Sons, & Field was completed and in position at 75 fathoms from the hydraulic ram, they proceeded to inspect the same.

In the first place, it was shown that the levers were carefully adjusted, very sensitive, and very powerful.

A 15-16-inch stud-link chain having been applied, one end being attached to the levers and the other to the ram, on the force of 16 tons (the full Admiralty test) being put upon it, *simultaneously the new levers and the hydraulic steelyard rose*, thereby indicating a *mutual immediate action and a perfect concordance with each other*.

Secondly, four 1-inch links, without studs, each $10\frac{1}{4}$ inches long, were placed between several lengths of 15 fathoms of $1\frac{3}{4}$ -inch chain, No. 1 being at the end of the first length, or that nearest the hydraulic force. A strain of 20 tons was applied, or 8 tons beyond the Admiralty proof of 1-inch open links, when they elongated—No. 1, to $10\frac{1}{4}$ inches; 2, to $10\frac{5}{8}$; 3, to $10\frac{7}{8}$; 4, to $10\frac{1}{2}$; showing slightly in favour of No. 3. After this the force was increased till a fracture should take place, when No. 3, or the link at 45 fathoms from the power, gave way, and the point of fracture showed a diminution of more than $\frac{1}{8}$ of an inch.

On examining the three unbroken links, they were found to have stretched severally, No. 1, to $11\frac{3}{4}$ inches; and No. 4, to $11\frac{1}{2}$ inches, showing great distress, and all as being on the point of separation. This indicates equal pressure at the several distances.

Afterwards, the $1\frac{3}{4}$ -inch chain was applied to the new levers and hydraulic ram; and again the new levers and the steelyard acted with every precision, when an apparent discrepancy arose of $1\frac{1}{4}$ tons. This, however, upon a more careful trial, afterwards was found to be under 5 cwt., to be accounted for by a link pressing crossways against one of the rollers, but which cannot be deemed any indication of any sensible difference in action, *between the distance of 30 yards and 150 yards, on the Admiralty proof being applied to cables*.

At the close of last week the new levers had been used up to 52 tons at the shorter and longer distances, *and were then found to act in like manner in both situations*.

These experiments of yesterday were tried under the control of Mr. Crossland, representing Messrs. Maudslay, Sons, & Field, *having his own attention to the hydraulic steelyard (sic.)*, while one of their skilled workmen attended to the levers.

I therefore respectfully submit the preceding as a faithful account of these operations, *testing a great principle*, and which, I trust, has confirmed my original views, upon which it pleased the Committee to permit my construction of the plant at their Proving House, Poplar, and an answer to the Board of Trade.

George B. Seyfang, Esq., Secretary,
Lloyd's Registry Office, City.

I have, &c.
(signed) Thos. M. Gladstone.

"I can truthfully confirm the above statement in every particular, having myself carefully conducted the experiments on behalf of Messrs. Maudslay, Sons, & Field, engineers and in presence of the Chairman and Proving House Committee of Lloyd's Register."

(signed) "Wm. Crossland.
"Assoc. Inst. Civil Engineers."

"Lambeth, 23 February 1865."

N.B.—Subsequently, Mr. Field and Mr. Crossland repeated their experiments, and came to the like conclusions.

Surely these ought to be a sufficient answer to the allegations, "In all other machines that we have seen, a chain cable is tested in lengths of 15 fathoms or less; but at this machine the length tested is 75 fathoms." "In attempting to test a cable of this length, a great part of the force of a machine is exerted in lifting the chain from the bed;" and it gives again full and unqualified contradiction to the statement, "When a 15 fathoms length is tested, the chain is stretched perfectly tight, like a string on a violin; but in the 75 fathoms length the chain is never pulled out of the form of a curve, or rather a series of curves or festoons."

In their having made both these statements to the Government, I have a right to call in question their accuracy. In the latter especially, as, although they never examined the first (as engineers would do), as to the second, they deliberately state that which they must have known (if they observed what was going on at the time they saw a chain tested) to be divergent from fact, since both gentlemen saw a long length of chain proved at Lloyd's machine, and thereby were enabled to see if *any distinction existed between the angle formed by the one 15 fathoms, or any and every other additional length when enduring the Admiralty proof*.

Also, they might clearly have noted by proper appliances that, at the Admiralty proof, "a great part of the force of a machine is exerted in lifting the chain from the bed," is contrary to the true results, in the fullest degree.

It

It is seen, then, by this Report to Lloyd's Committee, confirmed by Mr. Field and Mr. Crossland on the part of Messrs. Maudslay, Sons, & Field, that *there is no sensible difference of strain at any one point of the chain, whether in one or more lengths*; therefore, there cannot be any difference in the curvature of any one of the extended lengths when each is supported at every 15 fathoms.

That this is true, is patent to any one (though not scientific), only using his eyes; and if measured with the utmost precision, there can be found no difference, so that it becomes a baseless assertion to liken a "15 fathoms to the tight string of a violin, and 75 fathoms to hang in curves or festoons." What have these gentlemen to say now on this head?

After this what weight ought to be placed on their remarks, taken from the speculative and superficial opinions they introduce, as given by others?

What are they worth when contrasted with facts, which at all times they could have ascertained at Lloyd's Proving House?

Messrs. Galloway and Gray state that they heard on all sides condemnatory opinions as to Lloyd's Machine; many, I doubt not, from parties that never saw, never knew, and consequently could not understand the practice, or its due results.

They, however, without due inquiry or any proper personal examination, give these theoretical opinions to the prejudice of my reputation, and of Lloyd's Proving House property, and upon these your Honourable Board has acted, by setting forth the "preliminary requirements" referred to. Can this be just when Mr. Galloway and Mr. Gray had full opportunity, and on my part *pressing* invitations, to put them in possession of all that is really the truth on all these points, and which they might have had with *very small delay and expense*, by the simple use of steelyards, so as to satisfy any unbiassed and impartial judgment.

I would ask in relation to the *exact* sciences, of what use are any numbers of opinions if the inquirer, by going the right way, can readily reach an absolute and true verdict upon any matter or thing to be determined *under known and established laws*.

These gentlemen have misled their Lordships, hence all these evil results.

As to the assertion about selling chains or iron dearer or cheaper depending upon the machine to be used, and as to proving after blacking or painting, with other trifling matters, they are so insignificant as almost to be beneath observation.

But in the same misguiding spirit the marginal note to Clause 11 is, "Practice of blacking chain at 'Lloyd's,' before testing them, much objected to;" the fact being that "Lloyd's" never *blackened* any chain whatever; Lloyd's Rule No. 2 being, "No chain shall be proved if wet with paint or blacking;" when, in my judgment, if dry no disadvantage arises; and the chain they saw at Tipton must have been wet to allow these gentlemen to assert (Clause No. 11), "It was proved by actual experiment in our presence at Tipton that many flaws for which a chain is condemned if tested unblackened, escape notice if the chain is tested after it is blackened."

Believing myself to be quite *as impartial* as these officers on this question, seeing I act for as independent a body (Lloyd's Committee) as any in the country, *whose signification to me has ever been to do my duty without fear or favour*, I will stake my experience against their assertions; and (having no chain-makers' predilections, nor yet bias towards the shipowner) I can have no other object than to give, in my professional capacity, the results of that long experience and that practical acquaintance of the subject, which has run through my career from my youth up until now, covering more than 40 years' study, of this kind of machinery; therefore, I recommended Rule No. 2 to Lloyd's Committee as it is adopted by them. The Government officers using the names of Sir William Armstrong, Mr. John Penn, Mr. Fairbairn, Mr. Paget (a minnow among tritons), Mr. Hicks, Mr. H. D. Grey, and Mr. Dunn,* applies but to their opinion, as to the propriety of having extra lever test to public machines to be licensed.

To this I did not demur, though I considered it unnecessary, as shown in my letter

* Except as to Mr. Dunn, who *alone* gives any opinion in favour of testing the *shorter* length of chain, but to which none of the rest are pledged. And Mr. Dunn, at the time of construction, approved most warmly my innovation, which gives the extended test.

letter to Lloyd's Committee in November; and the Poplar machine having been carefully tested at the works where made, and afterwards by myself, with but one result; and now, finally, by Messrs. Maudslay, Sons, and Field, *it has been found in all cases to be most exact and truthful in action.* But the way in which the "Report" is drawn out, is to lead the ordinary reader to conclude that *all* the above gentlemen endorsed *all* the opinions of Messrs. Galloway and Gray, as conveyed in the clauses to which I have made objection.

By their "Report," and leading articles that have recently been written upon it in public scientific journals (I find from the pen of Mr. Paget), the two propositions to which I demurred, are, theoretically determined, *in direct opposition to all the facts of the case*, and the whole question thereby raised, as to any dependence whatever being put in "hydraulic machinery," though it has been practised for the last 40 years to my knowledge. If these two gentlemen are right, they have made doubtful, if not destroyed, the value of all that is past in relation to the proofs of *chains, anchors, girders*, and all other articles that have been hitherto tested. In 19 cases out of 20 none of these eminent men, whose names are given in the "Report," have applied levers, except for occasional correction.

These, therefore, must agree with me, that the "hydraulic machine" properly made, of true proportions, and well adjusted, with sufficient strength for applying and measuring great strains, is to be preferred to levers with knife edges, however hard the steel, or however well calculated in their proportions, especially for any jarring work, such as is occasioned by the frequent fracture of chains; and such machines can always be tried as to their correctness by any common and powerful steelyard. Messrs. Galloway and Gray proceed further in their recommendations to your Honourable Board, and adopted by it (*sic.*).

Clause No. 2 is: "In hydraulic machines, the cylinder shall be sufficiently long to allow of 15 fathoms of chain being tested without the necessity for taking a fresh hold to complete the strain."

This is based upon their observations in Clause No. 10 of their Report: "Again, a length of new chain of 15 fathoms will stretch from four feet upwards (we have seen a 15-fathom length stretch as much as 6 feet 6 inches), so that the cylinder A in the diagram is generally made about 8 feet long, for a 15-fathom length. To meet the stretching of a chain cable of 75 fathoms, properly tested, the cylinder A ought to be from 25 to 30 feet. The cylinder at Lloyd's machine in London is only 11 feet in length."* But my view of the duty of public proof and practice, as given in my letter to Lloyd's Committee, dated the 1st October 1862, when preparing the public for governing their public machine (*sic.*), in which the following clauses will be found:—

"I assume it as a principle always to be kept in view, and never to be set aside, nor compromised, that where a supply of chains and anchors may be given or contracted for, the same shall always be understood as being of the best quality; quality forming the basis of such contracts, since any inferiority must create an immense responsibility, by causing loss both of life and property.

"A public testing machine therefore is to confirm such contracts, rather than to create new or unreasonable conditions.

"It is in fact to certify that the manufacturer on the one hand, and the merchant or shipowner on the other, having come to mutual and satisfactory terms for a sufficient article, the public test releases the manufacturer, in degree, from further responsibility; and the shipowner will have the greatest satisfaction, by the certainty of having obtained a proper and sufficient article supplied to him for his use."

If such be the true basis, and as I have found it in practice true, it follows as a natural sequence, that the manufacturer in completion of his contract, as a check against his workmen, and more than all for his fair fame, will test his chains at his works before they are submitted to the action of any public machine; consequently, in the two years at Lloyd's machine it has been found that, even in testing 75 fathoms in one length, the piston rod, 10 feet long (not 11 feet, according to their loose Report), *has been found fully sufficient to complete*

* The large machine of Lloyd's is not like that shown in their report, having the so-called plunger on the top of the large cylinder, but placed much higher and in such a position *that neither dirt can enter it nor anyone tamper with it.* In the experiments made, in every particular it is like a chronometer watch, true in its action as the first day it was made.

plete the work at once, while in one or two cases only, out of hundreds, when the chain came untested, it was easy to restrict the length to 15 or 30 fathoms, thereby saving the renewal of the hold upon these chains.

But, assuming that it was necessary to take a *fresh hold*, what has that to do with the *correctness* of the machine? What disadvantage is it to the proof? I reply, None whatever. The only difference being that by the cylinder being too short, it adds to the *cost* of working, precisely as it does in proving a 15-fathom length contrasted with 75 fathoms (*but no real ground to condemn any machine otherwise correct.*).

Clause 7. "In the beautiful machine made by Sir William Armstrong, and erected at Birkenhead, and also in a very perfect machine in course of erection at Low Walker, on the Tyne, there are fitted (in addition to the graduated lever and mercurial gauge)—first, a series of compound levers, showing by dead weight the actual strain put on the chain; and, secondly, indicators to distinguish the actual strain at which a chain breaks." I never questioned* (having never fully examined) the Birkenhead machine, except as to its great cost to construct and sums laid out so extensively, *not tending to assist in its efficiency*. At Lloyd's machine, full provision is made to know at what strain a chain breaks, and an account is kept of the stretch† of every chain, and of the breaking point.

Half-yearly a full summary is given in my Reports to Lloyd's Committee. If Messrs. Galloway and Gray had put the question to me, I could have shown them all that has resulted at Lloyd's Proving House, on those two points, in these two years, after testing about 200,000 fathoms of chain of all sizes and in all lengths, varying from 15, 30, 45, 60, and 75 fathoms at one time, as was convenient, arising from the differential quantities that belong to ships (*sic.*).

But they decided and expressed their opinion without coming to the best and (*for extended length*) the only source from which their judgments might have been corrected and adjusted, so as to enable them to have given a faithful Report to your Honourable Board.

I now come to Clauses No. 5 and 6 as among the "Preliminary Regulations":

No. 5. "An examining bench of proper height shall be provided in a light place, for the purpose of examining the chains after they are tested, and before they are blacked."

My observation on this point is, that I have seen a mode of examining in which there is no examining bench at all, yet equally efficacious; therefore, I consider such restrictions as *totally unnecessary*.

That which is sometimes adopted, has been to erect a pulley upon a framework at a convenient height, the chain being lifted over it, and each link singly examined, and its goodness or defects determined.

I can see no objection to this method, though it increases in a slight degree the cost of the operation; but I do think it is the height of restriction and prohibition, to make a *sine qua non* (*sic.*) of any such "preliminary requirements" as this. In order to descend to the minimum of restriction, Clause No. 6, with the appearance of a great regard for human life, determines a point which the discretion of every person concerned in testing would naturally provide without it, seeing that Laird's Bill enacts, "That no manufacturer, &c. shall be released from other responsibility than prevailed before the passing of such Act;" consequently, those who have to do with public testing machines, will guard themselves from any such liabilities to accident, or take the consequences.

As a casual recommendation, if any risk was observed by the public officer, it is well, but as a "requirement," it appears to me out of place, when more important points are altogether omitted.

The last portions of the "preliminary regulations" are the proportion of the levers, which, though given in language to my mind involved and difficult to understand, need no particular comment, beyond their oppressive nature *towards every small manufacturer*.

Clause 6.† "The machine shall be so arranged, that the workmen employed at

* Although I never questioned, I have grave doubts, that if the Birkenhead machine was submitted to the judgment of three impartial engineers, the guards against error are not so true as are to be found at Lloyd's machine.

† The average stretch on 75 fathoms, given by Lloyd's record, does not exceed two feet, and that taken upon the testing of nearly 200,000 fathoms that have passed the ordeal.

‡ From testing long lengths the examination does not go on during testing, so that no danger can arise from the proximity of the examining bench.

at and near to it shall be in no danger from the fragments of links that fly about, when a cable breaks." And Clause 7, "Where there is more than one machine in an establishment, the whole of them must be licensed if one of them is," which last No. 7 seems exceedingly arbitrary as a positive regulation.

Having thus, I believe, answered fully and completely these various points that have sprung out of the "Report" to your Honourable Board, and shown their fallacy on very material points, I would submit a question involved in the action on the part of the Government; and I would most respectfully ask, have they the power they have assumed under "Laird's Bill," to restrict and to prohibit to the extent they propose in these preliminary regulations?

It is true that the Inspector appointed shall be obliged to follow the Regulations of the Board of Trade, but if those Regulations be shown to be unnecessary or in any degree unjust, while acting upon the crude materials they have been supplied with, should they not be carefully revised?

It appears to me that their Lordships, by that Act, are required to select an experienced and proper officer skilled in the duties he undertakes, and responsible to them for a just carrying out of the intention of that Act, and liable to dismissal if not performing his duties; and, further, to see that every machine is governed by rules that shall insure due regulation and performance of the work, but not to send out a commission to find any *speculative* opinions upon a great mechanical question, and not to restrict such officer in his duties, by preventing him from accepting *any machine that can be shown to be truthful*, whether such machine be worked by hydraulic power, by compound levers, or by screw and wheel application. Governed by their proper officers as to the machinery, and having *uniform rules of action in all accepted and licensed machines*, such rules conspicuously fixed for the public information, with a table of charges as directed by the Act, appears to me the full compass of the powers conveyed.

That I have been silent as regards the public until the present time, has been owing to my respect for, and my relation to, Lloyd's Committee, in whose hands I placed myself, and who, for their own sake, and to prove the worth of the work of their engineer, have spared no expense nor trouble on this question; but, having my work confirmed (to the unanimous satisfaction of Lloyd's Committee), *for the first time, could I, directly*, lay my case before your Honourable Board? If the Lords of the Committee of the Privy Council appointed for consideration of matters relating to trade, &c., would be pleased to co-operate with Lloyd's Committee of Registry, in my humble judgment the best results could not fail to follow; *but proper instruments must be used*, or all efforts will be unavailing, so far as Mr. Laird's Bill is concerned, to the public loss, and the common regret of every philanthropist. Trusting your Honourable Board will reconsider the situation from my sense of injustice received, when for years my endeavour has been to promote this great work for the further security of life and property on shipboard,

I have, &c.

(signed) *Thos. M. Gladstone, C.B.*,
Consulting Engineer, and Superintendent of
Lloyd's Proving House.

To the Right Honourable Thomas Milner Gibson, M.P.,
President of the Board of Trade,
&c. &c. &c.

—No. 2.—

(No. W. 1538.)

The Secretary of Lloyd's Register to the Secretary of the Board of Trade.

Lloyd's Register of British and Foreign Shipping,
2, White Lion-court, Cornhill, E.C.,
15 March 1866.

Sir,

IN requesting your attention to the letter addressed to the Chairman of this Society by Sir J. Emerson Tennent, on the 12th October last, transmitting copies of extracts from the reports made to the Board of Trade by
Mr.

Mr. Galloway, the Inspector of Proving Establishment Apparatus and Machinery, appointed under the "Chain Cables and Anchor Act, 1864," I am to express the regret of the Committee at the length of time which has elapsed before I have been enabled to reply thereto; but which, it will be seen, has arisen from the importance which the Committee attached to the statements contained in the extracts above alluded to, and the measures which they deemed it due to themselves and their engineer to adopt.

I am now instructed to transmit to you Copy of a Letter addressed to Messrs. Bidder, Clark, and Hawksley, the eminent engineers, and of the Report which has been received from them, which the Committee doubt not will receive the serious and careful consideration of the Board of Trade.

I am, &c.
(signed) *Geo. B. Seyfang*, Secretary.

Enclosure 1, in No 2.

Sir, Lloyd's Register of British and Foreign Shipping,
2, White Lion Court, Cornhill, E.C., 16 November 1865.

THE Committee of Lloyd's Register of British and Foreign Shipping having long felt the utter inadequacy of the proof test applied to the anchors and chains of the Mercantile Marine, passed a resolution on the 29th of January 1863, giving notice, that after a certain day, the anchors and chains of new ships would not be considered efficient, unless certificates of proof were handed in, showing that they had been submitted to the Admiralty strain, at some public testing machine.

As at that time there only existed two machines, which fulfilled the latter condition, viz., one at Liverpool, and the other at Birkenhead, the Committee determined to erect one for the Port of London.

To accomplish this, they engaged the services of Mr. T. M. Gladstone, who had been recommended to them as a competent engineer, and under his superintendence, the proving house at Poplar was erected at great cost, and, as they believed, in the most efficient manner.

To meet the requirements of the trade, Joint Stock Companies were subsequently formed in different parts of the country, and proving houses were established at the Tyne and Wear, and at Tipton, Netherton, Bristol, Llanelly, and Jersey.

The Committee requiring that all these establishments should be approved by them, their superintending engineer, Mr. Gladstone, was employed to inspect them, and on his report, they were passed by the Committee as proper and efficient machines.

In the year 1864, the Chain Cable and Anchor Bill was passed, which enacted that after the 1st of July 1865, no new chain cable or anchor should be sold, unless it had been tested at a licensed proving machine.

The engineer appointed to inspect the machines seeking to be licensed, and to report upon them to the Board of Trade, was Mr. R. Galloway.

On inspecting the society's proving house, at Poplar, he objected to many of the arrangements there, and pointed out what he required, all of which alterations were made, and subsequently the machine was licensed.

In the report made to the Board of Trade by Mr. Galloway, he represented that all the machines which had been approved by the Committee of Lloyd's, on the recommendation of their engineer, were more or less erroneous—thus impugning Mr. Gladstone's professional capacity in discharging the duty he had undertaken.

Mr. Gladstone being called upon to justify his former proceedings, has given a detailed report upon each proving house.

The Committee feel that on a subject requiring so much professional knowledge, they are quite unable to offer any opinion, and they therefore seek the assistance of those who are best qualified to advise them.

With this view, they are desirous that you should undertake this inquiry, and they would associate with you

Mr. George Bidder and Mr. Thomas Hawksley,

to whom a letter similar to this has been addressed.

The Committee deem it due, both to themselves and their engineer, that their former proceedings should receive the fullest investigation, and as these are impugned on the report of one engineer alone, they think they should either be established or refuted by others acknowledged to be competent to form an opinion on the exactness of the calculations on which Mr. Gladstone has acted, and the correctness of the basis on which those calculations are founded.

On your acceptance of this service, the various papers and calculations will be forwarded to you.

The several parties connected with the proving houses, either in their erection, or subsequently, will, no doubt, be ready to afford you every requisite information.

The Committee, throughout the whole of their proceedings, have been actuated by an earnest desire to establish a measure, which shall be a protection to both life and property, and they have every reason to be satisfied with the result hitherto.

However much they might be gratified, should the proposed investigation prove that they have not been misguided by their professional adviser, yet this wish is entirely subordinate to their desire that justice should be done between the two individuals whose reports are so much at variance.

Edwin Clark, Esq.,
24, Great George Street, Westminster.

I am, &c.
(signed) George B. Snyfang, Secretary.

Enclosure 2, in No. 2.

To the Chairman and Committee of Lloyd's Register of British and Foreign Shipping.

Gentlemen,

In accordance with your instructions, we have considered the matters referred to us, relating to the proving houses for chain cables and anchors, licensed for use by your authority.

We have carefully examined the printed correspondence handed to us in connection with the Report made to the Board of Trade, under the "Chain Cables and Anchors Act, 1864," to which reference is made in that correspondence.

We have also personally visited and tested the licensed machines at Poplar, Tipton, and Netherton, and have received every needful assistance and information from your engineer and others in pursuing our inquiries; not only with respect to these machines, but also in relation to the other machines mentioned in the papers received from your secretary.

We believe we shall best effect the objects you have in view in instituting this inquiry,

First. By giving our opinion as to the general efficiency and particular defects of the machines in question, and on the amount of reliance that may be placed upon their respective indications, and

Secondly. By making some observations upon matters more directly arising out of the correspondence placed before us.

1. The testing machines employed are similar to those generally used for the measurement of tensile forces of great magnitude, and consist in each case of a single horizontal hydraulic press, producing by direct action the amount of strain required. The ram of the press is not, however, constructed in the usual form of a solid plunger, but consists of a piston and piston rod, which, although not requiring a cross head, has, nevertheless, some disadvantages, as the friction is increased by the use of two leather collars instead of one, and by the oxidation of the rubbing surfaces of the piston rod and cylinder.

The strain on the cable is ascertained by the transmission of the pressure employed in the cylinder to a manometer or pressure gauge, and on the accurate indications of this apparatus the value of the measurements mainly depends.

The pressure gauge employed is accordingly made with great care, and consists of a truly turned piston, accurately fitted into a gun metal cylinder, and secured from leakage by a leather packing. As the pressure employed may reach even two tons on the circular inch, this piston is necessarily small, namely, about half an inch in diameter, and even then the weight to be balanced is considerable, and requires to be suspended from a long lever, the arms of which are in the proportion of 1 to 12 at Poplar, and in some other cases in the proportion of 1 to 24. This lever, called the hydraulic lever, though more properly a statical lever, is fitted with knife edge bearings, and furnished with weights, one of which travels upon the arm, and the others depend from the remote extremity; it is also carefully balanced *per se* by counterpoise weights.

If the whole apparatus is carefully made and adjusted, we are of opinion that no better method of determining the amount of large strains can be employed, more especially in a practical operation in which minute accuracy is neither obtainable nor required. The errors are indeed confined within very narrow limits, and, consequently, do not sensibly interfere with the use or utility of the machine.

These errors are partially corrected in the adjustment of the balance weights, but as the error attributable to friction increases with the pressure, no accurate compensation is in this way possible. The variation will, however, rarely amount to more than three or four per cent. on the gross result; and we may further observe, that as the pumps are applied until the weighted lever is lifted and continue working until the water is turned off in obedience to a signal made either by an attendant or by an automatic stroke on a bell, but not instantaneously, the error occasioned by a few additional strokes of the pumps is far greater than can arise from variation in the estimated amount of the friction.

In order to afford independent means of testing the errors of the machines, the Board
of

of Trade require an ordinary compound lever machine to be applied at the remote end of the proof house, but as the construction of such a machine for indicating enormous strains would necessarily entail great cost, it was probably felt to be unreasonable to insist upon a complete duplication of the measuring apparatus, and, consequently, the requirement was limited to the provision of means of verification to the extent of only one-fourth of the total maximum strain for which the hydraulic machine is licensed.

This additional machine is therefore in our opinion but of trivial value, as the check it affords applies only to minor strains in which the variation is small, and is not available when the increasing friction arising from the increasing pressure might render the test of some value. We think that a far less costly and more useful check would be afforded by substituting for the compound lever machine an additional cylinder piston and lever, working with oil, to the full extent of the pressure applied in testing, and of course without pumps, or any connection with those worked by the engine. The concurrent action of the two systems would effectually guard against irregularity, more especially if proper means were provided for bringing the two indications to the same place, for the purpose of enabling them to be observed together.

Another requirement of the Board of Trade, is the addition to each machine of a third indicator, consisting of an hydraulic piston, acting on levers, and in every respect similar to the common bent lever balance, except that instead of having moveable weights, a so-called ballistic pendulum is employed to indicate the amount of strain, by the extent to which such pendulum is diverted from the vertical through the point of suspension.

This machine, on account of the oscillation of the pendulum, possesses no great accuracy, and becomes especially uncertain as the strains increase; it is, therefore, as a check upon the operation of the other machines, practically valueless, and is provided, though for its size a costly instrument, solely for the purpose of recording, very approximately, as we have stated, the strain exerted upon a chain at the moment of rupture. This is effected by means of a light sliding pointer moved by the pendulum along a vertical quadrant, and left by it in the position indicating the maximum or supposed breaking chain.

It appears to us that this instrument answers no useful purpose that would not be better fulfilled by the ordinary inexpensive spring pressure gauge (fitted with a register) usually applied to hydraulic apparatus.

A restriction is imposed by the general conditions issued under the authority of the Board of Trade, in relation to the maximum length of chain to be tested at any one operation, on which we beg to offer a few observations.

This maximum length is limited to 15 fathoms, on the alleged ground that, in testing a greater length, say of 75 fathoms, "a great part of the force of the machine is exerted in lifting the chain from its bed," and that whereas, in testing a 15 fathoms' length, the chain is stretched perfectly tight like a string on a violin, in the 75 fathoms' length the chain is never pulled out of the form of a curve, or rather of a series of curves or festoons.

We think the above paragraph must have been written under some misapprehension of the physical conditions involved in the operations under consideration.

The force exerted in lifting the chain from its bed does not sensibly magnify the ultimate strain; this depends entirely upon the angle which the chain makes with the horizontal line at the points of suspension, and (neglecting for the moment the friction over the rollers) will be precisely the same in each of the festoons whatever may be their number.

The first objection, namely, the force due to the inclination may be entirely disregarded, as we find by calculations confirmed by our experiments that it does not amount to 1-8000th part of the test strain, whatever that may be, for a length of 15 fathoms, or the insignificant amount of 14 lbs. for a 50 tons' strain.

The other objection is the friction, which, although in amount somewhat larger, is nevertheless so minute that it may be safely set aside, since in any 15 fathoms length it does not amount to so much as 1-1100th part of the testing strain; or in the case of a cable tested as at Poplar, in lengths of 75 fathoms, it does not reach 1-220th part of the strain.

Looking, therefore, to the very small proportion which these strains bear to the testing strains, and to the irregularities inseparable from the rough and ponderous operations performed on chain cables; and, bearing in mind that the conditions under which a cable is strained by a ship at anchor are very different from those imposed by a mechanical and artificial substitute, we cannot perceive any sufficient grounds for the imposition of the restriction to which we have lastly referred, and this the more especially, because an economy, both of time or labour, may in general be effected by dealing with longer lengths than the length specified by the Board of Trade. Neither do we agree in the objection taken to the comparative shortness of the hydraulic cylinder in some of the machines, the length of the cylinder being a matter of economy and convenience, and not of accuracy or efficiency.

The majority of the manufacturers have, indeed, already submitted their chains to rough preliminary tests, whereby the capacity for extension has been reduced to an average of four or five inches per 15 fathoms before they are submitted to strain at the public machine.*

Assuming

* By a Return laid before us it appears that the average stretch of a total of 74,668½ fathoms tested slightly exceeded 4½ inches per 15 fathoms.

Assuming, however, that this had not been done, still no mechanical difficulty, and but little trouble, are occasioned by the necessity for reshackling the chain, and giving a renewed stroke to the hydraulic piston. This operation always occurs with any chain in which a link gives way; and, indeed, far less time will be required for the repetition of the stretching operation than is occasioned by proving the same chain in separate 15 fathoms lengths.

We do not attach any importance to the statements reported to have been made by one or more iron masters and chain makers of Tipton, on a subject so easy of independent investigation, and we feel confident there is no foundation whatever for the doubts thus raised respecting the efficiency of your machinery at Poplar.

2. In considering the extracts from reports and other documents which you have laid before us, we cannot fail at once to perceive that a large amount of personal feeling has been introduced into the correspondence of the parties concerned, and, as is usual in such cases, subjects of the most trivial character have been made to assume an appearance of importance to which they are in no other way entitled.

We apprehend we should not advance the inquiry by discussing in detail the several allegations made by the one side and the replies by the other side, and prefer, therefore, to offer a few general remarks, adverting only in a special manner to matters of real gravity or importance.

The discrepancies between the calculations laid before us, with respect to the weights to be employed to give the testing strains, are generally very insignificant in amount, and of no real importance in practice. They have been chiefly produced by minute differences in the admeasurement of the parts of the machines, by means of which the pressures are indicated, and might have been easily adjusted by a friendly conference between the engineers, without becoming the subject matter of obnoxious and recriminatory report and observations.

It appears, however, that in the cable machine at Low Walker, a very important error, pointed out by the engineer to the Board of Trade, had been allowed for a considerable time to exist uncorrected.

It is certain, however, as appears from the correspondence placed before us, that this error had been detected by your engineer before it had been observed by the engineer of the Board of Trade, indeed almost as soon as the machine was erected, but that the necessary alterations directed by your officer had not been carried into effect by the persons in charge.

We think it would be advisable, in future, that your engineer should not content himself by correspondence on matters involving large consequences; but that, on the contrary, he should be instructed and authorised, before recommending the grant of a Lloyd's license, to see that his requirements had been actually complied with. The fact that for so long a period as several months, all cables tested at this machine must have been subjected to a strain not less than 26 per cent. greater than that prescribed as the Admiralty proof, without the error being discovered by the chain makers, is singularly confirmatory of our view that philosophical accuracy is not practically necessary for the purposes of your license, or of Mr. Laird's Act, and that some latitude was doubtless contemplated when the rules of the Board of Trade were framed, regard being had to the condition that the strain should in no case be appreciably less than the prescribed amount.

With regard to the Netherton machine, we must express our conviction that your engineer has substantial grounds of complaint, with respect to the observations contained in the reports made to the Board of Trade; the statements "that every part was wrong," and that the hydraulic lever was "altered so that it now agrees with the dead levers," are not confirmed by our own investigations, for we found that, excepting in regard to a not very important adjustment of the counterpoise, no alteration had been made in the hydraulic machine approved by your engineer, but that, on the contrary, extensive alterations had been found to be necessary in the dead weight machine subsequently applied, but so applied, neither under the superintendence of your engineer, nor on his responsibility.

Our experiments on the Netherton machines, proved that for a range of tests, between 10 and 50 tons, both machines are now working well together; we have, therefore, arrived at the conviction, that the additional dead weight machine known to have been altered, was in fact corrected until it was brought into agreement with the hydraulic machine passed by your engineer.

Our observation of the condition of this dead lever machine, corroborated the information we received, that it is very rarely used in connection with Lloyd's machine, and from the quantity of chain then awaiting proof, it was also evident that the restriction with respect to the length of chain to be tested at one operation, is prejudicial to the interests alike of the shipowners and of the public.

With regard to the alteration required by the engineer of the Board of Trade, to be made in one of the knife edges of the Poplar machine, we are of opinion that although, as we believe, the machine worked reliably well without this alteration, yet that this has effected a satisfactory improvement in the arrangement of the main fulcrum. It was, perhaps, natural that each engineer should adhere somewhat pertinaciously to his own view as to the necessity for this modification, and we believe your engineer would have more readily conceded the matter in difference, had he not felt that his professional skill had been challenged by observations relating to other matters.

Lastly.

Lastly, we must express our surprise, that in his report on the London Anchor Testing Machine, dated 1st November, 1865, the Engineer of the Board of Trade should have enumerated defects which could not have fallen under his own observation, because although they once existed they had been already rectified at the instance of your engineer.

The result of our consideration of the whole subject is, that, in our opinion, the apparatus designed and executed under the superintendence of your engineer, and the machines approved by him, are efficient and well adapted for the purposes contemplated by your committee, namely, to secure to the mercantile navy the inestimable benefits of sound and reliable anchors and cables, and we think they are also such as ought to be satisfactory to any authorities or persons acting under Mr. Laird's Act.

We consider that credit is due to your engineer, not only as regards the accuracy and completeness of the Poplar machine, but also in regard to the practical ability displayed by him in the ingenious appliances he has devised for performing the various operations with economy and despatch, of and incident to the testing of massive cables and anchors, and in the general arrangement and management of the establishment.

In conclusion, we beg to express our unanimous opinion that the several machines licensed by your authority are not only sufficient for the purposes of Lloyd's Committee, but also for those of the manufacturers and users of chain cables and anchors.

We think, however, it is very desirable that each machine should be visited and examined by your engineer, at least once in every year, and that too without prior notice to the parties in charge.

We are, &c.
(signed) *Geo. P. Bidder.*
T. Hawksley.
Edwin Clark.

— No. 3. —

The Secretary of Lloyd's Register, to the Secretary of the Board of Trade.

(W. 1679.)

Lloyd's Register of British and Foreign Shipping,
2 White Lion Court, Cornhill, E. C.
22 March 1866.

Sir,

THE Committee having had Messrs. Bidder, Clark, and Hawksley's Report on the proving machines recognised by the Society, printed for the purpose of distribution, I, with reference to my letter of the 15th instant, forward to you a few copies of the same.

I am, &c.
(signed) *George B. Seyfang.*

P.S.—It will be observed that in page 3, line 19, of the printed copy, it is stated that "Such pendulum is *diverted* from the vertical through the point of suspension," not "*divided*," as written in error in the manuscript copy sent to you.

— No. 4. —

The Secretary of the Board of Trade, to the Secretary of Lloyd's Register.

(W. 1679.)

Board of Trade, Whitehall,
26 March 1866.

Sir,

I AM directed to acknowledge the receipt of your letter of the 22d instant, forwarding three printed copies of the Report of Messrs. Bidder, Clark, and Hawksley, on the proving machines recognised by the Society, for which I am to express to you the thanks of this Board.

I am further to state that this Board would be glad to be supplied with a dozen more copies of the Report.

I am, &c.
(signed) *T. H. Farrer.*

— No. 5. —

The Secretary of the Board of Trade to Sir *Wm. Armstrong*.
(W. 1679.)

Board of Trade, Whitehall,
27 April 1866.

Sir,

I AM directed by the Board of Trade, to inclose a copy of a report made to the Committee of Lloyd's Register of British and Foreign Shipping by Messrs. Bidder, Hawksley, and Clark, civil engineers, who it would appear were appointed by that Committee on the 16th Nov. 1865, for the purpose of making the fullest investigation of their former proceedings, in reference to the steps taken by them for testing the anchors and cables of the mercantile marine.

Messrs. Bidder, Hawksley, and Clark, in making their report respecting the former proceedings of the Committee of Lloyd's Register, have referred to the general conditions issued by this Board on the subject of proving establishments, apparatus, and machinery. Some of the requirements of the Board of Trade appear to meet with the disapproval of these gentlemen; *e. g.*, the dead weight levers they think of "trivial value," and the pendulum gauge "practically valueless," and for the limit of the length of the cable to be tested at one pull to 15 fathoms, they see "no sufficient grounds." They also do not agree to the objection taken by this Board to certain cylinders on account of their being too short to exert the strain on a new chain at one operation.

Before these general conditions were framed you were, the Board of Trade believe, consulted personally by their officers; and the subject has since been referred to you officially on more than one occasion. I am therefore now directed to ask you to be so good as to favour this Board with any observations you may think it desirable or necessary to make on the subject of the inclosed report; especially having reference to the objections taken to the levers and dead weight, the pendulum indicator, the 15 fathoms length, and the length of the hydraulic cylinder.

This Board would also be glad to be informed whether, after considering the inclosed report, you still maintain your opinion as to the correctness and fairness of the general conditions issued by the Board of Trade, and whether you are aware of any other method than dead weight by which the accuracy of the hydraulic levers can be tested.

I am, &c.
(signed) *W. D. Fane*.

For Enclosure in No. 5, see Enclosure 2, in No. 2.

— No. 6. —

The Secretary Board of Trade, to the Secretary of the Mersey Dock Board.
(W. 1679.)

Board of Trade, Whitehall,
27 April 1866.

Sir,

I AM directed by the Board of Trade to inclose a copy of a report recently made by Messrs. Bidder, Hawksley, and Clark, civil engineers, who have been consulted by the Committee of Lloyd's Register with reference to the proceedings of that Committee in connexion with proving establishments, apparatus, and machinery.

It would appear that, for reasons given in the report, these gentlemen think that the dead weight levers attached to the apparatus are of "trivial value," the pendulum gauge "practically valueless," and for the limit of the length of the cable to be tested to 15 fathoms, they see "no sufficient grounds."

The officers of the Mersey Dock and Harbour Board have now had much practical experience in connexion with the working of a proving establishment, fitted strictly in accordance with the general conditions issued by this Board. This Board would therefore be glad if the Mersey Dock and Harbour Board would cause them to be furnished with the opinions of Mr. Ellacott, the engineer of the Board, and of Mr. McDonald, the superintendent of the establishment

lishment at Birkenhead, giving the result of their own experience and observation, and especially bearing on the necessity or otherwise for the dead-weighted levers, the pendulum indicator, and the 15 fathom length.

I have, &c.
(signed) *W. D. Fane.*

For the Enclosure in No. 6, see Enclosure 2, in No. 2.

— No. 7. —

The Secretary of Lloyd's Register, to the Secretary of the Board of Trade.

(W. 2065.)

Lloyd's Register of British and Foreign Shipping,
2 White Lion Court, Cornhill, E C.

Sir,

12 April 1866.

THE Committee of Lloyd's Register of British and Foreign Shipping having determined to print, for their own purposes, the correspondence which has taken place in relation to their chain and anchor proving establishment at Poplar, and the several reports, &c., which have been made in connection therewith, I am directed to send a copy thereof for your acceptance.

I am, &c.
(signed) *George B. Seyfang.*

Enclosure in No. 7.

[NOTE.—*The Correspondence of which a copy was inclosed in this Letter, has already been printed in Parliamentary Paper 111, 1866, and in this Paper, No. 304, 1866. The Appendix to the inclosure has not previously been printed by order; it is as follows, viz.:*]

EXTRACTS from REPORTS of Mr. Galloway to the Board of Trade, with
Mr. Gladstone's Replies.

THE BRISTOL MACHINE.

*Extracts from Mr. Galloway's Report to
Board of Trade.*

Mr. Gladstone's Reply.

7 June 1865.

6 November 1865.

Attended at the testing machine works, Marsh-street, Bristol, in accordance with arrangement, the secretary being present. Found the contractors busy fixing the machine; pointed out that the knife edges were not long enough for 120 tons: the power, the secretary informed me, he required a license for.

These remarks refer to the levers required by the Board of Trade, and have no reference to the machine as approved by me.

The workmanship is very rough, but as the Company have not accepted the machine, and the contractor not being willing, I could not make a careful examination.

I gave all necessary information to the secretary, and promised to call next morning to see the drawings.

This proving house was originally part of the chain and anchor works, and to make it a public machine, according to the views of Lloyd's Committee, the owner has built a wall to separate it from the workshops; the owner, with a few others, forming a company, under the title of "The Public Testing Machine, Bristol."

Lloyd's Committee required that it should cease to be a private machine, i.e., the property of a chain and anchor manufacturer.

A public company was formed to comply with this requirement, and the works were completely isolated, in a manner I could not but approve. (See Appendix, page 29.)

Should a chain break when under proof, it must be taken into the works of Messrs. Bell & Daniel to be repaired, and these gentlemen are the only chain and anchor makers in Bristol.

[NOTE.—Page 29 in the Appendix here referred to by Mr. Gladstone is printed at Page 8 of Parliamentary Paper, No. 111. 1866.]

8 June 1865.

Met the Chairman of the Bristol Testing Company, pointed out all the defects and requirements. He proposed to let the contractors finish their work, then send me the drawings, and appoint a time for the inspection.

Mr. Galloway's Report.

Dear Sir,

14 June 1865.

I have to acknowledge receipt of working drawings of the testing machine at your proving house, and beg to point out that the distance between the centres of each lever must be 8 in. for machines of 100 to 200 tons, and not $6\frac{1}{2}$ in. as shown on the tracing; and that the knife edges or bearings are sufficient for an 80-ton machine only, and that for a machine of 120 tons they must be 6 in. long.

(signed) *Robert Galloway.*

J. Collins, Esq., Bristol.

20 July 1865.

Proceeded to Bristol; found that the examining bench was wrongly constructed. I had on a former visit given proper instructions, but the present arrangement was to meet the wishes of Lloyd's engineer. I requested it should be altered as I at first suggested: the cover to the machine requires chains and counter-balance weights; attempted to test the machine to 80 tons, but could not get more than 60 tons, the chain breaking at that quantity.

Examined the dead-weighted levers, found them correct, and in proportion for an 80-tons machine; then examined the hydraulic lever, and found the weight per ton on end of lever was 2 lbs. 9 oz. 6 drams, whereas the weight per ton should have been 2 lbs. 9 oz. 14 drams.

This machine had been examined by Lloyd's engineer, approved by him and Lloyd's committee, and in addition to the error in the weights, the hydraulic lever was in error to the extent of five per cent.

Mr. Gladstone's Reply.

6 November 1865.

These remarks refer to the levers required by the Board of Trade, and have no reference to the machine as approved by me.

This bench Mr. Galloway required 2 ft. 4 in. from the ground, while at Tipton, Netherton, Tyne, &c., they are on the ground, and have been approved by him.

Even admitting Mr. Galloway to be right, it amounts to less than $1\frac{1}{2}$ per cent., while my measurement more nearly corresponded with that of the maker, which I append, and if true, the machine was right.

Mr. Galloway should show how he makes this difference in the lever.

This machine was not yet completed; certain additions being required by me, though not material for its correct working.

Dear Sir,

I HAVE just got home this evening, and of course only now seen your letter. Per other side you have calculations of Bristol machine, which I think are correct; at any rate the check levers at end of machine will show any error in the levers on cylinder. With kind regards,

T. M. Gladstone, Esq.

Victoria Works, South Shore,
Gateshead-on-Tyne, 29 July 1865.We remain, &c.
(signed) *Benning, Clarke & Co.**Calculations of Bristol Chain Testing Machine, by the Manufacturers, Messrs. Benning, Clarke & Co.*Piston rod, diameter $4\frac{1}{2}$ = 15.9 area.Cylinder, diameter, $10\frac{1}{8}$ scant. = 88.16.Then $88.16 = 15.9 = 72.26$ effective area of piston.

Area of valve on cylinder, 1 square inch.

Lever, 12 to 1.

228.40

= 30.999 lbs. on valve.

72.26

30.999

= 2.5832 weight at end of lever.

12

To give one ton on chain.

Or 2 lbs. 9 oz. $5\frac{1}{4}$ drams exact weight made for Bristol test.

By Mr. Gladstone, 2 lb. 9 oz. 6 drams.

By Mr. Galloway, 2 lb. 9 oz. 14 drams.

(signed) *Thomas M. Gladstone.*

Dear Sir,


I AM very sorry I am unable to meet you in Bristol to try machine again, but I hope from the instructions I gave to our man that all will be done as you requested, and hope machine will be all right.

T. M. Gladstone, Esq.

Victoria Works, South Shore,
Gateshead-on-Tyne, 7 July 1865.

Yours, &c.
(signed) *W. Clarke.*

LICENSED BY THE BOARD OF TRADE.

No. 13.65 B.  T.

Bristol Chain and Anchor Testing Company (Limited).

(Approved by the Committee of Lloyd's Register of British and Foreign Shipping.)

DIRECTORS:

Mr. John Lucas, Chairman.

Mr. Mark Whitwell, Deputy Chairman.

Mr. Thomas Evans.

Mr. James Bell.

Mr. William Turner.

Proving House, for Testing Anchors, Chain Cables, &c., Marsh-street, Bristol.

Superintendent:—Mr. Thomas Brooks. Appointed under the sanction of the Committee of Lloyd's Register of British and Foreign Shipping.

THE LLANELLY MACHINE.

*Extracts from Mr. Galloway's Report to
Board of Trade.*

9 June 1865.

Proceeded to Llanelly; found the machine; was informed it is owned by a blacksmith, who made it. The knife edges wrong; cannot pull more than 3 feet at once. Proceeded to the office of Mr. Jones, the Clerk to the Commissioners; that gentleman being from home, called upon Mr. Broom, and arranged to meet him and the maker of the machine at the proving house in the morning, at nine a.m.

Mr. Gladstone's Reply.

6 November 1865.

The above machine is entirely in the keeping and under the control of the "Harbour Commissioners," and is independent of any private party. When I saw it, I required certain additions and alterations (not material) to be made, some of which were not completed at the time of Mr. Galloway's visit; and, in consequence of his requiring further alterations, involving great expense, it is doubtful, from the limited requirements at that port, whether any machine will now be planted there.

N.B.—The main alteration I proposed was to double the length of the worm, while, as it stood, the machine acted with accuracy.

THE TYNE MACHINES.

*Extracts from Mr. Galloway's Report to
Board of Trade.*

Dear Sir,

12 June 1865.

THE Board of Trade have forwarded to me the letters and tracings you sent in, respecting the Testing Machines at Low Walker.

I lose no time in pointing out a very serious error, viz., on the tracing it is stated the levers indicate 15 tons. They must indicate 25 per cent. of the full power of the machine: thus for 300 tons machine they must indicate 75 tons, and for the 150 tons machine they must indicate 37½ tons. The machinery cannot be passed in its present condition. I hope to finish here on Thursday, and will come on to Newcastle.

(signed) *Robert Galloway.*

F. Carr, Newcastle.

304.

Mr. Gladstone's Reply.

6 November 1865.

These remarks refer to the levers required by the Board of Trade, and have no reference to the machine, as approved by me.

Mr. Galloway's Report.

11 July 1865.

No. 1.—Proceeded to Low Walker; covers not fitted; pointed out to the Secretary the necessity of pushing on with the work, as I could not remain in Newcastle more than two or three days. Was informed that a chain broke here a short time ago; part of the broken link struck the hydraulic lever, within a few inches of the man in attendance, and then passed out of the door into the river.

No. 2.—A chain that had been previously blacked was proved at this proving house, examined, and forwarded to a ship at Guernsey; a man on board the vessel, overhauling the chain, discovered a crack in one of the end links, the blacking having shaken out. Upon further examination, another crack was discovered, partly hid by the blacking; the matter was reported to Lloyd's, the chain sent back to the Tyne, the defective links cut out and re-tested.

Met Mr. Clarke, engineer to the Tyne Company, explained to him the requirements to obtain a temporary license, and also for a regular one.

15 July 1865.

A messenger from Mr. Brown (Abbot & Co.), to inform me that the testing machine at his works was complete, and hearing from the secretary of the public machines at Low Walker they would not be ready unless Mr. Brown sent more men, I thought it best to attend to Mr. Brown; I therefore attended, and finding all in order gave my certificate; Mr. Brown informing me that the Low Walker machines should be ready on Monday, and that he had obtained the permission of Lloyd's Committee to prove chain cables at his testing machine until those at Low Walker were ready. The result of the experiments at Mr. Brown's (Abbot & Co.), shows that to the present time chain cables and anchors have been proved 5 per cent. above Admiralty proof.

Proceeded to Low Walker; found the cover was on the machine, but the counter-balance weights were not complete. Tested the machine to 81 tons; found dead-weighted levers correct; then examined the hydraulic lever; found it greatly in error, and requested the original calculations to be sent for, when I found the mistake was in that, giving 8½ oz. on end of lever to equal 1 ton, instead of 3 oz. 14 drams, or about 26½ per cent. above Admiralty proof. This machine had been examined by Lloyd's engineer, and approved by that Committee as correct. The above refers to the cable machine; the anchor machine was not so much in error, the weight on end of lever to represent 1 ton was 1·671; by their calculations it weighed 1 lb. 12 oz.; it should have been 1·7129, or 1 lb. 11 oz. 6½ drams. This machine, like the former one, had been examined and passed by Lloyd's engineer, and received the approval of that Committee.

18 July 1865.

Proceeded to Low Walker; tested the anchor machine to 60 tons. The different weights for each machine having been correctly adjusted, delivered certificates to the secretary.

Mr. Gladstone's Reply.

No. 1.—I had ordered a screen to be fitted to protect the workman referred to.

No. 2.—I cannot conceive how any blacking could shake out. The rest only proves a want of careful examination at the machine, where any crack could have been seen as well as on board the vessel.

6 November 1865.

This being a private machine, not admitted by Lloyd's Committee, except for temporary use, was never examined by me, nor was I directed to do so.

It will be seen that this error was discovered and pointed out by me so early as the 25th October 1864, and that the neglect of the manufacturer and the engineer of the company caused the serious error to continue, while I had no opportunity nor instruction to repeat my examination. (*See correspondence annexed.*)

About 1½ per cent. difference in our calculations, and which depends upon exact measurement.

Dear Sir,

London, 25 October 1864.

I ENCLOSE you the calculations from Mr. Clarke, on the Tyne machine.

You will see at once the weights and the levers are in error, therefore the whole wrong. Not a day should be lost in having these corrected, or all your proving will be in error. It is only to point them out to the makers to have them corrected, and when done, to return the calculations to me, to enable me to report on Thursday.

Yours, &c.

Mr. Burrell.

(signed) *Thomas M. Gladstone.*

Memorandum.—My inspection of the Tyne machine was on the 20th October 1864, and the corrected calculation given by Messrs. Benning and Clarke, the makers, was sent to me on the 27th, whereby I was satisfied that all had been made right.

Dear Sir,

Custom House Chambers.

Newcastle-on-Tyne, 26 October 1864.

I AM duly in receipt of your favour of yesterday; Mr. Burrell and Mr. Clarke have gone into the matter to which you have referred, and both of them write you by this post on the subject. I trust their explanation will prove satisfactory to you, and you will be able to report to the Committee to-morrow as you mention.

I remain, &c.

Thomas M. Gladstone, Esq., C. E.

(signed) *Frank Carr, Secretary.*

Lloyd's Register, Cornhill, London.

Dear Sir,

Victoria Works, South Shore.

Gateshead-on-Tyne, 26 October 1864.

MR. BURRELL handed me your note to him about the levers. I see you rather mistake the kind of lever they are; if you look the drawings over again, you will perceive they are levers of the second order, having their fulcrum at the end instead of the intermediate point, as you have taken them, consequently the calculations I give are quite correct. Hoping you will be able to get your report sent in to-morrow,

I remain, &c.

T. M. Gladstone, Esq.

(signed) *William Clarke.*

P.S.—I will be in London about the middle of next week, and shall be glad to give you any explanation about them.

Memorandum.—The appended calculations (as corrected) came with this letter.

6 November 1865.

(signed) *Thomas M. Gladstone.*

Messrs. Benning & Clarke's Calculations of Chain Test.—Low Walker.

Cylinder 18½	-	-	-	-	-	261·5872
Rod - 7½	-	-	-	-	-	44·1787

217·4085 Area of Piston.

217·4085) 2240·000 (*13·8185 lbs. per square inch, to give one ton on the chain.

2174085

* Should have been 10·303018

6591500

6522255

6924500

6522255

4022450

2174085

18483650

17392680

10909700

10870425

Lever 24 to 1.

... 39275

24) 13·8185 (*5549 lb., or 8½ oz. to give one ton to the lever end.

120

131

* Should have been 4292 lbs. to the ton, or 6 oz. 13½ dram.

120

118

96

225

216

9

This calculation approved by me as correct.

27 October 1864.

(signed) *Thomas M. Gladstone.*

Dear Sir,

UP to the present time I have not been able to find your letter of the 25th October 1864, but can recollect the tenor of its contents, informing me that you had received the sketch and calculations of the machines of Mr. Clarke, and that the proportions of the levers were incorrect, consequently the whole of the calculations were wrong, and directing me to see to it; upon receipt of that letter, I called upon Mr. Clarke at his office, and laid your letter before him, when he explained that the power and weight being upon one side of the fulcrum, the proportions of the levers, as given by him, were quite correct; he further informed me that he was writing to you upon other matters, and that he would mention these facts to you. If you will be pleased to turn to my letter of the 27th of October 1864, you will find I mentioned having seen Mr. Clarke upon the subject, and gave you his explanation; and not hearing any more upon the subject, I concluded that Mr. Clarke's explanation was satisfactory, and that he had written as he had promised.

I never for a moment thought of weighing the standard weights, knowing that Mr. Clarke and Mr. Gibson, two practical engineers, were employed, the one by the contractors and the other by the Company, to see that everything was correct.

Trusting, my dear Sir, this explanation will be considered sufficient, I beg to subscribe myself,

Yours, &c.

Thos. M. Gladstone, Esq., (signed) Robert Burrell, Superintendent.
Lloyd's Proving House, Poplar, London.

Dear Sir,

PROVING HOUSE, LOW WALKER,
near Newcastle-on-Tyne, 26 October 1865.
I BEG to inform you that I saw Mr. Clarke yesterday evening, when he promised to have the tracings of the machines done immediately and forwarded to me; after comparing them with the machines, I will forward them to you without delay.

I am, &c.

T. M. Gladstone, Esq., (signed) Robert Burrell, Superintendent.
Proving House, Poplar, London, E.

Dear Sir,

PROVING HOUSE, LOW WALKER,
near Newcastle-on-Tyne, 30 October 1865.
HAVING compared the tracings of the Sunderland and Walker machines with the machines here, and the sizes as taken by me at Sunderland, I have handed them to Mr. Clarke to have the sizes of the pistons marked upon them, and they will be forwarded to you by this evening's post; I hope you will get them in time to be of service to you; I am sorry you should have waited so long for them. Mr. Clarke will be in London in the course of the week, when he will do himself the pleasure of calling upon you.

I am, &c.

(signed) Robert Burrell, Superintendent.
T. M. Gladstone, Esq., Proving House, Poplar.

THE NETHERTON MACHINE.

Extracts from Mr. Galloway's Report to Board of Trade.

28 June 1865.

Proceeded to Netherton by appointment to meet Mr. Hingley, and to examine the public testing machine there. Found the levers were very badly fitted, also the knife edges; covering to the machine not ready; in fact every part was wrong.

Mr. Bloomer being present, gave directions to have the work set right.

Dear Sir,

13 July 1865.

I write to inform you that I leave here on Saturday. I shall be glad to know the condition of the Netherton Testing Machine. I think you should take the opinion of an engineer before I again visit it.

(signed) Robert Galloway.

Mr. Bloomer.

Mr. Gladstone's Reply.

6 November 1865.

When I examined this machine, I considered the cylinder not very carefully bored, but adequate for its intended use.

The levers required by the Board of Trade will not work, and the Company have to depend entirely on the hydraulic levers (*see* letter annexed, from Mr. Reade, the superintendent). It will appear thereby that the hydraulic levers and weights now in use are those fitted originally, and yet Mr. Galloway has licensed the machine. I am at a loss, therefore, to understand how he found it in "every part wrong."

Mr. Galloway's Report.

15 August 1865.

Proceeded to Netherton to weigh corrected weights, and to test indicator; found the weights correct, and examined hydraulic lever; found that when tested with dead levers it was 10 per cent. light, which exactly agreed with my calculations; altered it so that it now agrees with the dead levers.

Proved the machine to 150 tons, and delivered the certificate to Mr. Bloomer.

This machine had been passed by Mr. Gladstone, and approved by Lloyd's Committee.

Mr. Gladstone's Reply.

6 November 1865.

I had the hydraulic levers and weights re-examined in October last by Messrs. Walter May & Co., who made them; they found them unaltered, and as they had first fixed them.

I also personally examined them, and corroborate the fact. Their correctness in action depends upon the truthfulness of the annexed calculation.

If this be correct, Mr. Galloway's statement is inaccurate in every part, nor has he been able to test with what he calls the dead levers.

From Messrs. *Walter May & Co.*, Engineers, Birmingham.—27 October 1864.

South Staffordshire Chain Proving Company. Netherton Station.

Calculations for Index Lever of Hydraulic Chain Proving Press.

Area of cylinder, $12\frac{1}{4}$ " diameter	-	-	-	-	-	115·466
„ piston rod, 6" diameter	-	-	-	-	-	28·2744
Effective area of piston	-	-	-	-	square inches	87·1916
Area of indicator piston or stalk, $5\frac{1}{4}$ " diameter	-	-	-	-	5 square inch.	
Relative areas of piston and stalk	-	-	-	-		174·3832 to 1
Centre of fulcrum to centre of stalk	-	-	-	-		2"·125

Required.—The distance from fulcrum at which a weight of $\frac{1}{2}$ lb. will indicate a pressure of 1 ton on piston.

$$2240 \text{ lbs. (1 ton)} = 12·8452 \text{ lbs. effective weight required on stalk.}$$

$$174·3832.$$

$$\text{Then } \frac{12·8452 \times 2·125}{·5} = 54"·5921 (= 4'6" \frac{37·8944}{64}) \text{ for distance at which each } \frac{1}{2} \text{ lb. weight will indicate a pressure of 1 ton on piston,}$$

Therefore.—For any other pressures that may be required, add upon the hanging rod at end of lever, one $\frac{1}{2}$ lb. weight for every ton strain required on chain.

For Sliding Weight on Lever.

Distance of weight from fulcrum - - - - - 50 inches.

$$\text{Then } \frac{12·8452 \times 2·125}{50} = 545921 \text{ lbs. (8 ozs., } 11\frac{5}{16} \text{ drams), required to indicate 1 ton strain on chain.}$$

Note.—The lever, stalk, hanging rod and washer are counterbalanced. Friction is not taken into account in any of the above calculations.

November 1865.

Mem.—The above is a copy of the paper, accepted as correct, having been examined by me, and the machine recommended accordingly.

(signed) *Thomas M. Gladstone.*

Staffordshire Public Chain and Anchor Testing Company (Limited).

Sir,

Netherton, 4 November 1865.

In reply to your note respecting the adjustment of the dead weight and hydraulic levers at Netherton, I beg to say that during the several trials which I witnessed, the bells attached to these levers did not strike at the same moment.

I have made inquiry on this subject, and learn from the engineer and others belonging to this establishment, who were present when the levers were being regulated, and find that not one of them heard the *two* bells strike at exactly the same time.

The dead weight lever has been used *only once* for testing chains or anchors since it was licensed, and then it did not act with the hydraulic lever.

The quadrant is not yet marked to indicate the strain.

Thomas M. Gladstone, Esq.

I am, &c.
(signed) *M. K. Reade*, Superintendent.

THE TIPTON MACHINE.

Extracts from Mr. Galloway's Report to Board of Trade.

5 July 1865.

Proceeded to Tipton, testing hydraulic lever with dead levers and indicator, having the hand pump fitted; weighted the dead levers one ton at the time, and marked indicator up to 75 tons; then tested the hydraulic lever which had been in use to the present time, and found that it indicated 10 per cent. *above* the Admiralty proof. This machine had been passed by Mr. Gladstone and approved by Lloyd's Committee as correct, the error of 10 per cent. being the mean, the greatest error being 20 per cent. for small power of four to five tons.

Mr. Gladstone's Reply.

6 November 1865.

This machine was correct when I passed it, and it will be seen by the recent report after examination by Mr. Mountain (Messrs. Walter May & Co.) of Birmingham, that the hydraulic lever operates correctly, while there is a constant difference of two tons between it and the Government appliances. This machine being fitted in accordance with the tracings sent herewith, the report to the Government must, therefore, be wrong.

As I know of no possibility how such variations as indicated in the statement of Mr. Galloway can exist, it is for him to explain the same, and how he arrives at his conclusions.

(See Letter of Mr. Tregenna, Superintendent, below).

Machine at Tipton, Original Calculations, 1864.

Calculations of Index Lever of Chain Proving Press.

Area of cylinder, 12" diameter	-	-	-	-	113.097 square inches.
Ditto - piston rod, 6" diameter	-	-	-	-	28.2744 "
Effective area of piston	-	-	square inches		84.8226 "
Area of indicator piston or stalk ($\frac{5}{8}$ " diameter)	-	-	-	-	.5
Relative areas of piston and stalk	-	-	-	-	169.6452 to 1
Centre of fulcrum to centre of stalk	-	-	-	-	2".125

Required.—The distance from fulcrum at which $\frac{1}{2}$ lb. would indicate a pressure of one ton on piston.

$$1 \text{ ton} = 2240 \text{ lbs.} = 13.204 \text{ lbs., effective weight required on stalk.}$$

$$\frac{169.6452}{52}$$

$$\text{Then } \frac{13.204 \times 2.125}{.5} = 56".117 \left(4'8".\frac{1}{8}\right), \text{ for distance at which each } \frac{1}{2} \text{ lb. weight will indicate 1 ton on piston.}$$

Therefore.—For any other pressures required, add upon the hanging rod at end of lever, one $\frac{1}{2}$ lb. weight for every ton strain required on chain.

For Sliding Weight on Levers.

$$\text{Distance of weight from fulcrum} - - - - - 52 \text{ inches.}$$

$$\text{Then } \frac{13.204 \times 2.125}{52} = .5395865 \text{ lbs., or 8 ozs. } 10\frac{1}{2}\text{s. drams.}$$

$$\text{And to indicate up to 5 tons by the sliding weight, add the extra weight of } .5395865 \times 4 = 2 \text{ lbs. 2 ozs. } 8\frac{2}{3}\text{s. drams.}$$

Note.—The lever, stalk, hanging rod, and washer are counterbalanced, and friction is not taken into account in the above calculations.

Examined by me and approved on the 9th August 1864.

Thomas M. Gladstone.

N.B.—The machine re-examined by Mr. Mountain (Messrs. Walter May & Co.) in October 1865, and the same found to correspond with the proportions given in 1864.

Thomas M. Gladstone.

Staffordshire Public Chain and Anchor Testing Company (Limited).

Sir,

Tipton, 1 November 1865.

I BEG to acknowledge the receipt of yours of yesterday, handed to me by Mr. Mountain, of the firm of May & Co., engineers, Birmingham, and felt much pleasure in at once doing

doing all I could to assist him in what he required. We tried the old lever with the dead weight lever, and Tangye's indicator, from five tons to 45 tons, and every intermediate five tons; the result of these trials was that there were two tons difference each time, the old lever lifting each trial with *two tons* less than the dead weight lever and Tangye's indicator. As soon as I get a 2 in. cable here to test, I will carry on the trials to 72 tons, but I anticipate the same result.

Mr. Mountain wished me to do so, and let him know the result, which I will not fail to do at the earliest opportunity. Mr. Mountain found the machine correct in all its dimensions as to lengths, lever weights, marks on it, diameter of plunger, cylinder, and piston rod, and his firm conviction was that the old lever is correct, and that the others are wrong.

I beg to say, that your request of the 7th ultimo will be complied with by next post (I mean my monthly return). I should have sent it by this post, but thought this of greater importance. I shall be only too happy to comply with anything you may desire me.

Thomas M. Gladstone, Esq.

I have, &c.
(signed) Samuel Tregenna, Superintendent.

Sir,

Tipton, 1 November 1865. 7.35 p.m.

ACCORDING to promise, I have tried your lever at a strain of 50, 60, and 70 tons, with the same results as your trials yesterday, as near as I could judge.

Mr. C. G. Mountain.

I am, &c.
(signed) S. Tregenna.

P.S.—In haste to save post. I will continue to try the lever when opportunity offers, for your further information.

S. T.

Mem.—This is that the hydraulic lever indicates two tons less strain than the other instruments.

Please return this at your convenience.

Yours, &c.
(signed) C. G. Mountain.

THE SUNDERLAND MACHINE.

*Extracts from Mr. Galloway's Report to
Board of Trade.*

Mr. Gladstone's Reply.

10 July 1865.

Proceeded to Sunderland. I was informed that only a few days before, the superintendent was nearly killed by a chain breaking, and half a link passed within a few inches of his head and struck into the wall. I saw the broken link.

Yet I had previously been told that no accident had happened, and the cover was "all stupid nonsense." Mr. Lumsden said he would see about the cover, and I promised to call again on Wednesday.

12 July 1865.

Proceeded to Sunderland, and met the directors by appointment.

Covers nearly complete; carefully examined the machine, and tested the hydraulic lever with the dead levers, the result in each case showing a difference of five per cent., the hydraulic levers being that much too light, therefore to the present time the chains have been tested 5 per cent. under the Admiralty proof. These machines were examined by Mr. Gladstone, and approved by Lloyd's Committee as correct. Delivered certificates.

6 November 1865.

I annex the calculations on which this machine was constructed, appending the tracing of hydraulic lever, which tracing has recently been compared with the machines by Mr. Burrell, and found correct. Upon this data the utmost difference between the makers' calculations and mine is, in the chain machine, 54 parts of a dram, or 3 lb. on the ton (*see figures in red ink**), and in the anchor machine 1.5 of a dram, or nearly 5 lbs. on the ton. How Mr. Galloway makes it appear that "to the present time the chains have been tested 5 per cent. under the Admiralty proof" is for him to explain, as in this, as in other cases, he gives no data to judge from.

* Printed in italics.

The Original Calculations of Levers for Sunderland Chain and Anchor Testing Machines, 1864.

(Sent to me from Sunderland.—*T. M. G.*)

CHAIN MACHINE.

		Area.
$13\frac{5}{8}$		
Cylinder, $18\frac{1}{2}$ full diam.	=	185.75 135.9412
Rod, $5\frac{1}{2}$ diam.	=	23.75 23.7583
		<hr/>
		112. 112.1829
		<hr/>

Valve, 1" area.
 $\frac{2240}{112.1829} = 19 \text{ lb. } 15 \text{ oz. } 9.552 \text{ dram.}$
 $\frac{2240}{112} = 20 \text{ lbs. on valve to give 1 ton on chain.}$

Lever on valve, 12 to 1.

$\frac{19.967}{12} = 1.66391 \text{ (or } 1 \text{ lb. } 10 \text{ oz. } 9.9609 \text{ dram.)}$

Then— $\frac{20}{12} = 1\frac{2}{3} \text{ lbs. (or } 1 \text{ lb. } 10 \text{ oz. } 10\frac{1}{2} \text{ dram.)}$ on end of lever to give 1 ton on chain.

Difference .54 dram. in 1 ton weight; .54 dram. would indicate about 3 lb. on piston.

CHECK LEVERS.

Upper lever	-	-	-	-	-	2 to 1
Lower ditto	-	-	-	-	-	20 to 1
Combined	-	-	-	-	-	40 to 1

Then 56 lbs. on levers gives 1 ton on chain.

ANCHOR MACHINE.

		Area.
$10\frac{1}{2}$		
Cylinder, $10\frac{1}{2}$ scant. diam.	=	85.9 86.0749
Rod, $4\frac{1}{2}$ diam.	=	15.9 15.9043
		<hr/>
		70. 70.1706
		<hr/>

Valve, 1" area.
 $\frac{2240}{70.1706} = 31.922$
 $\frac{2240}{70} = 32 \text{ lbs. on valve to give 1 ton on chain.}$

Lever on valve, 12 to 1.

$\frac{31.922}{12} = 2.6601 = 2 \text{ lb. } 10 \text{ oz. } 9 \text{ dram.}$
 $\frac{32}{12} = 2\frac{2}{3} \text{ lbs. (or } 2 \text{ lb. } 10 \text{ oz. } 10\frac{1}{2} \text{ dram.)}$ on lever to give 1 ton on chain.

Difference $1\frac{1}{2}$ dram. This weight would indicate 5 lb. nearly.

CHECK LEVERS.

Upper lever	-	-	-	-	-	2 to 1
Lower ditto	-	-	-	-	-	20 to 1
Combined	-	-	-	-	-	40 to 1

Then 56 lbs. on levers gives 1 ton on chain.

8 November 1865.

Memorandum.—The above are the calculations on which I passed the machines on the Wear; the red* figures showing my difference with those of the makers, of which they were advised.

Thomas M. Gladstone.

* The words and figures in *italics* were printed with red ink in the original.

THE LONDON MACHINE.

Extracts from Mr. Galloway's Report to Board of Trade.

Mr. Gladstone's Reply.

21 July.

No. 1.—By order of the Board of Trade proceeded to London, to inspect the testing machine at Poplar. Proceeded to Poplar; no person in authority to meet; examined the machine, found the cover to large machine not quite complete; the windows to give light to examining bench not fixed. The small anchor machine not fitted with dead levers. The men were employed testing chain. I asked the reason, and was informed that the chain cables they were testing had been contracted for before the Act came into operation, and that Mr. Wood had orders sufficient to keep one machine going for two years without a license.

22 July.

No. 2.—Proceeded to Lloyd's Proving House, Poplar; again no person to meet me; gave the foreman directions as to testing the machine, and arranged to attend again on Monday.

Gentlemen,

I visited Lloyd's Testing Machine yesterday, and again to-day, but could not do anything, there being no person in authority to meet me. I propose visiting the machine again on Monday, and shall feel obliged if you will send a person to meet me, as I wish the levers taken down for measurement.

(signed) *Robert Galloway.*

Messrs. Maudslay & Co.

24 July.

No. 3.—Proceeded to Lloyd's Proving House, as arranged, found a slight error in the line of centres of the top lever, which increased the length 1-16th of an inch.

25 July.

No. 4.—Again attended at Lloyd's Proving House to measure cylinder, piston rods, and other parts; examined the hydraulic lever, the one all the experiments had been made with; discovered it was wrongly constructed.

26 July.

Again attended at Lloyd's Proving House. Met Mr. Gladstone, Lloyd's engineer, also Mr. Crossland, representing Messrs. Maudslay, Sons & Field; pointed out the error in the hydraulic lever. Mr. Gladstone thought the error of no consequence, although the distance from the power to the fulcrum could be changed at pleasure; but Mr. Crossland agreed with me that the lever was wrongly constructed, that it did

304.

6 November 1865.

Mr. Galloway had every attention paid to him whenever he was at the testing house, but as the machine at the time he names was entirely in the hands of Messrs. Maudslay, Sons & Field, I was not called upon to interfere. When I introduced Mr. Galloway to Mr. Crossland, from Messrs. Maudslay & Co., I stated that in consequence of the Report to the Board of Trade, by Messrs. Galloway & Gray, it was put in the hands of those eminent engineers to prove whether the machine was right or wrong; and being satisfied with it myself, whatever expense, alteration, or addition were made must be at the instance of Messrs. Maudslay, Sons & Field, or the Board of Trade; but if I saw anything which I considered unnecessary, I should make my protest to Lloyd's Committee.

I tested several chains sold before "Laird's Bill" came into operation. After that time the owners took all the responsibility.

As to the observation about Mr. Wood keeping the machine going for two years, it is quite new to me.

6 November 1865.

This correction did not amount to one-tenth per cent. in its action, and was hardly worthy of notice.

The error in construction herein alluded to was not admitted by me; on the contrary, I protested against the change proposed (see my letter to the Secretary, dated 26th July, page 26).

The machine could not as first fixed "be changed at pleasure," as asserted, any more than by the present plan it could be changed. The lever did indicate correctly, nor do I recollect Mr. Crossland calling my attention to it, although he preferred the other method. The alteration proposed merely consisted in reversing a centre from an internal to an external bearing, say by changing the knife edge from the upper to the

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Mr. Galloway's Report.

not indicate correctly, and that he had before drawn Mr. Gladstone's attention to it. At last Mr. Gladstone arranged for Mr. Crossland to take the lever away and make it right. The machine is not yet tested, the windows for examining bench not fixed, nor is the cover to machine complete. Mr. Crossland promised to write me directly the machine was complete.

Mr. Gladstone's Reply.

lower bearing; but as the short end of the lever moves but one-eighth of an inch, it could not be of any great consequence to alter it, whereas it might endanger the levers working well; while *as it stood*, it had proved itself so uniformly true through 2½ years' constant work, that I protested against the alteration.

Mr. Crossland took the lever away, but without "*having any arrangement with me*," as here suggested, the machine being already in Messrs. Maudslay & Co.'s hands, by the instruction of the Committee.

As regards the assertion that the hydraulic lever "*did not indicate correctly*," I would simply observe that before Mr. Galloway had anything *personally* to do with it, it *proved its correctness when tested by the levers supplied by Messrs. Maudslay & Co.*, and in the presence of the Committee; and I fearlessly assert that now it is altered it is not more sensitive nor more true than it was before.

9 August.

Proceeded to Lloyd's Proving House. The weights having been altered in accordance with my calculations, Mr. Crossland, in taking the correct measurements of cylinder and rod, agreed with me exactly. Proved the machine to 150 tons, and delivered certificate to Mr. Seyfang. Reported to Board of Trade.

The alteration in the weights became necessary in consequence of the change in the lever, and not because they were wrong previously.

Thomas M. Gladstone.

PROTEST.

Dear Sir,

London, 26 July 1865.

MR. GALLOWAY has decided that the centre knife edge of the hydraulic lever should be altered, and as the Committee have desired that the requirements of the Board of Trade shall be met, Messrs. Maudslay, Sons & Field have this in their hands.

So satisfied am I with the *true* action of this lever as it is, without the possibility of divergence (unless tampered with), that *individually* I protest against it; and on its being done, the action will not exceed the correctness heretofore, nor be more effective, while it will create a week's delay, without any advantage.

I am, &c.

George B. Seyfang, Esq.

(signed) *Thomas M. Gladstone.*

ON THE LIVERPOOL TESTING MACHINE.

*Extracts from Mr. Galloway's Report to Board of Trade.**Mr. Gladstone's Reply.*

29 July 1865.

Liverpool Testing Machine: found the cover to bed finished, and the lights in roof over examining bench; examined the knife edges of the levers, found they required repairs.

16 August.

Proceeded to Liverpool to the testing machine there, weighed weights, &c., replaced levers, and proved the machine to 72 tons; delivered certificate.

This machine had been examined by Lloyd's engineer, and approved by that committee.

6 November 1865.

I was never instructed to examine the Liverpool machine, nor did I do so, or make any report thereon.

Mr. Galloway's Report.

18 August.

Copy of letter to the Engineer Mersey Dock Board:—

"I beg to acknowledge the receipt of your letter referring to King's Dock Testing Machine.

"The reason I made the note on the certificate, is in consequence of the printed regulations of the Board of Trade, where it states that 'a machine shall be long enough to test 15 fathoms of chain in one pull.' The three months' license will give you good time to make the alterations to meet the requirement referred to, and without stopping the work more than a few days.

"I believe the Board of Trade have the power to grant a temporary license, if not my certificate will be useless."

24 August.

Met the engineer at the King's Dock Machine, to decide upon the best mode of lengthening the bed.

THE JERSEY MACHINE.

Extract from Mr. Galloway's Report to Board of Trade.

September 1865.

I have examined the Testing Machine at Jersey, and pointed out to the chairman and directors the various alterations and additions required; although approved by Lloyd's Committee, the machine does not indicate correctly.

Mr. Gladstone's Reply.

6 November 1865.

I proved this machine carefully when I was sent to St. Helier's, and found it correct, and certified accordingly.

It is true the cylinder is short, but it is well made, and has a winch provided to tighten the chain. As the chains sent to the island are always tested before leaving the manufacturers, a cylinder 3 feet 3 inches is, in my judgment, sufficiently long to test at any time, without a second pull. And while on this subject, I should be glad to be informed, by one duly qualified to give an opinion on the subject, what is the great objection to a chain being subjected to a second pull on account of the chain stretching beyond the length of the cylinder. If a chain break in the testing, it must be subjected to a similar operation.

ON THE LONDON ANCHOR TESTING MACHINE.

Sir,

Board of Trade, Whitehall, 13 November 1865.

WITH reference to the former letter from this Board enclosing copies of "Reports" made by the Inspector of Proving Establishments, Apparatus, and Machinery, appointed under the Chain Cables and Anchors Act, I am now directed by the Board of Trade to forward to you, for the information of the committee, the accompanying copy of a report of the inspector's survey of the old machine at Poplar. I am to state that this Board have sanctioned the granting of a license for the machine to test anchors, but for the reasons stated in the report, they must withhold a license for testing cables.

To the Chairman, Lloyd's Register,
White Lion-court, Cornhill, E. C.

I am, &c.
(signed) T. H. Farrer.

Office of Trade Surveyors, East India Buildings,
5, Lime-street, E. C., 1 November 1865.

Sir,

I HAVE the honour to inform you that I have this day completed the examination of the Anchor Testing Machine, at Lloyd's Proving-house, Poplar, and delivered the certificate to Mr. Seyfang.

The examination has occupied considerable time, on account of the many and very considerable errors in the hydraulic lever, which before the dead-weighted levers were fitted was the only guide in applying the proof strain.

In the first place it was found that that lever did not work freely on the knife edge fulcrum; the next error was in the small plunger, the friction of which was so great as to cause an error of several tons, and last, but not least, the weights were incorrect. All these had to be set right, viz., a new knife edge in the lever, a new plunger, and new weights.

The hydraulic lever now acts nearly correctly with the dead-weighted levers, but its original formation prevents any alteration from making it absolutely correct.

This machine was originally the property of Mr. Mitchison, and was, I believe, when in his possession, used by Lloyd's Committee to ascertain the strength of single and double rivetted plates, &c., with a view to frame their rules as to the strength of iron ships; whether the errors in the hydraulic levers were then known and allowed for, I am unable to say, but if not allowed for, the experiments on which those rules are founded must have been very incorrect.

I have granted a certificate for the machine to test anchors, but I cannot grant a certificate to test cables, owing to the permanent error above referred to.

The Secretary,
Marine Department, Board of Trade.

I have, &c.
(signed) R. Galloway.

REPLY to Mr. Galloway's Report to the Board of Trade on the London Anchor Testing Machine.

Proving House, West India Dock, New Road, Poplar, E.,
London, 20 November 1865.

Sir,

I BEG to reply to the allegations contained in Mr. Galloway's Report to the Board of Trade, dated 1st November 1865, concerning Lloyd's smaller testing machine.

The facts are these, that while applying the levers required by the Board of Trade, as the machine had been long in use, and the plunger was made of iron, it had become to a certain extent corroded, and I thought it desirable to have it replaced by one made of gun metal, so as to act more freely, and as exactly as the principle would admit of.

I therefore requested Messrs. Maudslay, Sons & Field, to make the alteration *before Mr. Galloway inspected it*. A delay took place from the non-delivery of the "Armstrong Ballistic Indicators," so that the Board of Trade Inspector was not called in until *all was complete*, when he examined it; therefore, all his notes as to its errors, either in its lever action or the weights, are not *of his own knowledge*, consequently the errors are a perfect assumption on his part.

The machine had, however, always acted with a fair exactness. I tried it with the larger machine, and though not nearly so sensitive, it was sufficiently so for all practical purposes. I can safely say then there was not "*an error of several tons*." *There is no new knife edge*, but (as I have noted) a new plunger, which necessitated a re-adjustment of the weights, and the old ones being found to be *chilled castings*, it compelled the adoption of *new weights*, as no tool would cut the old ones. If they had been of *soft metal*, they would all have been used again.

As the Board of Trade Inspector has passed it for testing *anchors*, I am at a loss to conceive why it should not pass for testing *chains*. It is the first time I ever heard that the one should not be equally truly tested as the other, and any error of a machine must apply equally to both of these articles; and I have no hesitation in asserting that there is no defect in this machine which can form a sound ground for any such limitations.

It may not be in my province to reply to that part of the report made by Mr. Galloway, which refers to "*breaking plates*," and the decided opinions passed by him thereon; *but as an engineer*, and knowing through the transactions of the Society of Naval Architects (of which I have the honour to be an associate) the objects of the experiments, conducted with the greatest care by the able surveyors to Lloyd's Register Office, whatever error pervaded the machine *would be constant*—consequently it *could not disturb the value nor the correctness of the experiments so made*, the rivetted plates being tested and compared with solid plates, and all broken under the same circumstances and at the same time.

It is further remarkable that Mr. Galloway should assume that Lloyd's rules were founded on these experiments, and consequently must be incorrect; the fact being that the said rules were made and published in 1854, while these experiments were not made until December 1857.

George B. Seyfang, Esq.

I am, &c.
(signed) Thomas M. Gladstone.

— No. 8. —

The Board of Trade to the Secretary of Lloyd's Register.

Board of Trade, Whitehall,

27 April 1866.

Sir,

I AM directed by the Board of Trade to acknowledge the receipt of your letter of the 12th instant, and to request that you will be good enough to forward to this Board 25 additional copies of the inclosure therein.

I am, &c.

(signed) *W. D. Fane.*

— No. 9. —

(W. 2279.)

The Secretary of Lloyd's Register to the Secretary of the Board of Trade.

Lloyd's Register of British and Foreign Shipping,

2, White Lion-court, Cornhill, E. C.,

28 April 1866.

Sir,

I BEG to acknowledge the receipt of your letter of the 27th instant, and, in compliance with the request therein, transmit to you, for the Board of Trade, 25 copies of the correspondence on the Society's Proving Houses, &c.

I am, &c.

(signed) *Geo. B. Seyfang*, Secretary.

— No. 10. —

(W. 2279.)

The Secretary of the Board of Trade to the Secretary of Lloyd's Register.

Board of Trade, Whitehall,

4 May 1866.

Sir,

I AM directed by the Board of Trade to acknowledge the receipt of your letter of the 28th ultimo, inclosing 25 copies of certain correspondence on the subject of proving establishments, apparatus, and machinery, printed and circulated by the Committee of Lloyd's Register; and with reference thereto, I am to inform you that the report of Messrs. Hawksley, Bidder and Clarke has been referred to Sir Wm. Armstrong, to the Mersey Dock and Harbour Board, to the Directors of the Machine at Low Walker, and to Messrs. Galloway and Gray.

The reports from the whole of these sources will be sent to the committee of Lloyd's Register as soon as they arrive in this department.

Pending the arrival of these reports, I am to request that you will move the Chairman and Committee to be so good as to forward to this Board, at their early convenience, certified copies of certain letters referred to, but not contained, in the pamphlet you have kindly forwarded, viz. :—

1. Mr. Gladstone's letter to Mr. Carr, of the 25th October 1864.
2. Mr. Burrell's letter to Mr. Gladstone, of the 27th October 1864; and
3. Mr. Gladstone's letter, to which Mr. Burrell's letter of the 18th October 1865 is a reply.

This Board will, at the same time, be glad to learn from the chairman and committee whether the memo., in italics, on page 50,* signed by Mr. Gladstone, is intended to convey the meaning that the corrections marked with a star, and shown on page 51,† were actually on the calculations when they were received by Mr. Gladstone from Mr. Clarke on 27th October 1864, or, whether it means that those corrections were made by Mr. Gladstone himself. * See p. 19. † See p. 19.

If the corrections were made by Mr. Gladstone himself, the Board of Trade would then be glad to be informed whether they were made on the 27th October 1864, the date that Mr. Gladstone approved the calculations as correct, or, whether they were made on the 6th November 1865, the date of Mr. Gladstone's memo. on page 50.

I am, &c.

(signed) *W. D. Fane.*

— No. 11. —

(W. 2283.)

The Secretary of the Mersey Dock Board to the Secretary of the Board of Trade.

Secretary's Office, Liverpool,
28 April 1866.

Sir,

I beg to acknowledge the receipt of your letter of the 27th instant, enclosing a copy of a report recently made by Messrs. Bidder, Hawksley and Clarke, civil engineers, who have been consulted by the Committee of Lloyd's Register with reference to the proceedings of that committee, in connexion with proving establishments, apparatus, and machinery, which shall receive attention.

I am, &c.
(signed) *John Harrison*, Secretary.

— No. 12. —

(W. 2290.)

Messrs. *Galloway* and *Gray* to the Secretary of the Board of Trade.

Sir,

London, 28 April 1866.

WE have received your directions that we should report on a letter and its enclosures, addressed to the Board of Trade by the Secretary of Lloyd's Register of British and Foreign Shipping, on the subject of our Report on Proving Establishments, Apparatus, and Machinery, dated 24th October 1864, and presented to Parliament in the following year; and that we should also report on the subject of the communications addressed by the Board of Trade to the Secretary of Lloyd's Register, on the 12th October and 13th November 1865, enclosing copies of reports relative to certain machines licensed by the Committee of Lloyd's Register, and subsequently refused licenses by the Board of Trade.

With reference thereto we have to submit the following statement, which we have, for the sake of convenience, arranged under the following headings, namely:—

- I.—The General Conditions issued by the Board of Trade by virtue of the Chain Cables and Anchors Act.
- II.—The practice of the Committee of Lloyd's Register to license Machines without reference to these General Conditions.
- III.—The Report made to the Committee of Lloyd's Register by Messrs. Bidder, Hawksley and Clark, civil engineers, especially referring to
 - (a) The Machines at Poplar.
 - (b) The Machine at Low Walker.
 - (c) The Machines at Netherton and Tipton.
- IV.—Some Remarks respecting other Machines licensed by the Committee of Lloyd's Register.
- V.—Conclusion.

I.—GENERAL CONDITIONS issued by the BOARD OF TRADE.

The "Chain Cables and Anchors Act," which received the Royal Assent on the 23d June 1864, provides (section, 7) that "Chain Cables and Anchors shall be subjected to the same tensile strain as that to which chain cables and anchors respectively of similar size, weight, or description, are or shall be subjected before being received for the use of Her Majesty's Naval service;" and section 2 provides that the Board of Trade "shall grant licenses" to persons erecting proving establishments, apparatus, and machinery, for testing Chain Cables and Anchors under the Act.

In September of the same year we were authorised and directed by the Board of Trade to make a preliminary unofficial tour of inspection for the purpose of observation, and of collecting information on the subject of Proving Establishments generally. During that inspection we came into communication with the most intelligent manufacturers of Chain Cables in the country, and

and with the practical engineers superintending the works of those manufacturers, with the most celebrated makers of testing machines, and with several eminent civil engineers who had turned their attention specially to the subjects on which we were making inquiry.

At the end of October 1864, we made the report referred to above. That report forms the subject of a part of the paper now referred to us. In making that report we were enabled, from the sources of information named and by the co-operation of many of the gentlemen above referred to, to suggest certain general requirements universally believed to be proper and necessary in connection with testing machines.

Those suggestions were forwarded by Mr. Milner Gibson's directions for the consideration of the following engineers, namely:—Sir W. Armstrong, Mr. William Fairbairn, Mr. Hick, Mr. John Penn, Mr. Paget, Mr. H. D. Grey, and also to Mr. Laird, M.P.

These gentlemen were good enough to consider the subject carefully, and to forward very careful detailed and suggestive replies, and it was after digesting those replies that the detailed conditions issued by the Board of Trade were framed.

The paragraphs numbered 8, 9, and 10, in the general conditions respecting the proportions of the levers and knife edges, are not a part of the original suggestion we made, but were added at the suggestion and in the words of one of the gentlemen above-named, pre-eminently acquainted with the subject of testing machines.

Those conditions are printed in Parliamentary Papers, No. 112 (1865), and No. 111 (1866).

After the conditions;—originated, framed, and settled as above shown,—were finally issued, they were objected to by the Committee of Lloyd's Register of British and Foreign Shipping, and their objections were strongly urged on the attention of this Board by the Chairman of that Committee. Out of consideration for so important a body as the Committee of Lloyd's Register, the Board of Trade, without holding out any hope that the conditions would be altered, agreed to refer the matter once more for the consideration of those whom they consider their ablest advisers.

Accordingly the Board of Trade again referred the subject to Sir W. Armstrong, Mr. Fairbairn, Mr. Hick, Mr. John Penn, and Mr. Paget, with the addition of Mr. Hawkshaw. These gentlemen, with the exception of Mr. Hick, personally inspected the machine at Poplar.

The Committee of Lloyd's Register accepted the decision of those gentlemen, and agreed to alter and adjust their machine at Poplar in accordance with the conditions.

At the present time no machine is licensed by the Board of Trade, under the Act, that does not conform to these doubly confirmed conditions.

We have been careful to explain the origin and progress of these conditions, in order to explain that they are the result of the best practical experience and advice that the Board of Trade could obtain, and to remove an impression apparently existing in other quarters that they are the result of "acting upon crude materials."

Nor do we think that, under the circumstances, the Committee of Lloyd's Register have stated the case quite fairly to their advisers, when they say "that their former proceedings are impugned on the report of one engineer alone."

II.—MACHINES Licensed by LLOYD'S REGISTER.

The Committee of Lloyd's Register do not as a matter of course, receive the certificates of proofs made at machines which have complied with these conditions, and have been licensed by the Board of Trade in accordance with the provisions of the Act. They have only received certificates from machines licensed by themselves, and without reference to the Board of Trade conditions.

Certain machines, approved of, and authorized by, the Chairman and Committee of Lloyd's Register to test cables for ships requiring classification on Lloyd's List, were subsequently examined with the view of granting Board of Trade licenses under the Act, when it was found they were insufficient to meet the Board of Trade conditions, and could not be passed. A representation on this subject was made to the Committee of Lloyd's Register on the 12th October and 13th November 1865.

III.—REPORT of Messrs. *Bidder, Hawksley and Clark.*

In consequence of this representation, the Committee of Lloyd's Register called in the services of Messrs. Bidder, Hawksley and Clark, on the 16th November 1865, in order that their "former proceedings should receive the fullest investigation," and these gentlemen have made a report, dated the 12th March 1866. This report has already been printed by the Committee of Lloyd's Register, and has, we believe, been circulated. In that report those eminent engineers say that they have "purposely visited and tested the licensed machines at Poplar, Tipton, and Netherton."

The Board of Trade licenses for those machines were issued before the services of these gentlemen were called in. It is, therefore, only fair to conclude that, although the dates of the visits are not given, those visits and inspections were made after the licenses had been issued by this Board. This is material, as we shall show further on.

Poplar Cable Machine.

As regards the machines belonging to Lloyd's Register at Poplar, we have to remark as follows, namely :

Messrs. Bidder, Hawksley and Clark, on their investigation of "former proceedings" say, "that we do not attach any importance to the statements reported to have been made by one or more ironmasters and chainmakers at Tipton, on a subject so easy of independent investigation, and we feel confident there is no foundation whatever for the doubts thus raised respecting the efficiency of your machine at Poplar." This has reference to paragraphs 10 and 11 of the report made by us in October 1864. In those paragraphs we referred to certain peculiarities of construction and of practice at that time existing at the Poplar machine, and we stated that an ironmaster at Tipton informed us "that he would supply iron in any quantities guaranteed to pass the London Lloyd's machine at 10s. a ton less than he could if it were to pass the machines at Tipton or Birkenhead, and that several chain makers informed us that they could afford to sell chains at 10s. a ton cheaper if they knew they were to pass the London Lloyd's machine than they could if they were to pass the Birkenhead or Tipton machine." This same statement was repeated in the Board of Trade by several cable makers and ironmasters. There can, therefore, be no doubt about the truth of our representation on this point, and manufacturers themselves did attach very great importance to it.

It is difficult to understand exactly what meaning Messrs. Bidder, Hawksley and Clark intend to convey in the following passage of their report : "We feel confident there is no foundation whatever for the doubts thus raised respecting the efficiency of your machine at Poplar." This refers to the large "cable" machine constructed under the direction of the Chairman and Committee of Lloyd's Register, by Mr. Dunn of Manchester.

If, with the present machine before them in 1866, they are referring to the machine as we saw it in 1864, their remark is scarcely applicable, because that machine was admitted to be in error, and has been corrected, and because the arrangement universally questioned in 1864 does not now exist. If, on the other hand, they refer to the machinery as it exists in 1866, they indorse the proceedings of the Board of Trade and our opinions, since the machine has been altered to meet the "general conditions," and has received the Board of Trade license.

On this point we feel that the ambiguity should be cleared up. We also feel that it is due to ourselves that there should not be the slightest chance of a misunderstanding. We must, therefore, at the risk of being lengthy, enter into a detailed explanation.

When the machine at Poplar was visited in the months of September and October 1864, we found that the bed of the machine was intended to take a chain 75 fathoms long. Along this bed, at every 15 fathoms, were iron bars, on which the chains rested. These iron bars were intended to act as rollers, but they were set roughly, and did not act properly.

These rollers were adjusted to suit a cable of a certain size, but were incapable of being adjusted to suit any other cable.

We

We have seen two cables tested in this machine, and we have seen that when the proof-strain, indicated by the hydraulic lever, was on the cables, they did hang in curves over the rollers, and the torsion was never taken out of them.

The hydraulic cylinder of this machine, although intended to test a length of cable of 75 fathoms, was only long enough (10 feet 10 inches) to test a new cable of 15 fathoms.

The chains were tested after they were blacked, and the subsequent examination of the chains (if any) was very cursory.

A chain that had been passed at the cable machine at Poplar, was sent on board the "Pera," where, by a casual observation, it was found to be fractured; and it had to be sent on shore again.

The strain required by the Committee of Lloyd's Register was measured by the hydraulic lever, and the approximate accuracy of an hydraulic lever was tested by breaking pieces of iron in a machine to be licensed by the Committee of Lloyd's Register. If a bar of iron, of a given size, the average breaking strain of which would be, say, about 20 tons, broke in a machine, when the hydraulic lever indicated about 20 tons, that was sufficient to show that the machine and lever were "near enough" for the purposes of Lloyd's Committee.

It was to the Poplar machine as we found it, fitted and worked on these principles in 1864, and universally questioned by public opinion, that our remarks applied; and we therefore cannot believe that that machine can have been contemplated by Messrs. Bidder, Hawksley and Clark when they suggest that "there is no foundation whatever" for the remarks made throughout the country to its prejudice.

In the month of May 1865, when Messrs. Armstrong, Fairbairn, Hawkshaw, Penn and Paget again visited the cable machine, the length of the bed had been reduced to 60 fathoms, and the bars at 15 fathoms apart had been replaced by large accurately turned rollers. The upper surface of these new rollers was placed considerably above the centre of the cylinder. A compound lever apparatus, by which the strain exerted by hydraulic pressure could be measured, had also been added; and yet with these additions and these improvements these very eminent engineers rejected the machine in favour of a uniform length of 15 fathoms.

It was then, as has been stated above, that the Committee of Lloyd's Register decided on complying with the conditions issued by the Board of Trade, so far as the Poplar cable machine was concerned, and they applied to Messrs. Maudslay and Field with that view.

On the 26th July 1865, and after repeated inspections had been made, this machine, with the bed reduced to 16½ fathoms, was ready for inspection, with a view to obtaining a license under the Act; and on being inspected it was then found to be inaccurate. The inaccuracy will be best explained by extracts from former correspondence. "Extracts from Mr. Galloway's Reports:"—

"24th July 1865.—Examined dead-weight levers; found a slight error in the line of centre of the top lever, which increased the length $\frac{1}{8}$ th of an inch."

This shows that the dead-weight lever of this machine was adjusted before the hydraulic lever and apparatus.

"25th July.—Again attended; the hydraulic lever, the one all the experiments had been made with, discovered to be wrongly constructed."

"26th July.—Again attended, met Mr. Gladstone, also Mr. Crosland; pointed out the error in the hydraulic lever. Mr. Gladstone thought the error of no consequence, though the distance from the power to the fulcrum could be changed at pleasure. Mr. Crosland agreed with me that the hydraulic lever was wrongly constructed, that it did not indicate correctly, and said that he had drawn Mr. Gladstone's attention to it."

This error even Messrs. Bidder, Hawksley and Clark do not question; and it was not until this lever had been set right, and several other things done, that the license was granted.

Poplar Anchor Machine.

As regards the anchor machine at Poplar, Messrs. Bidder, Hawksley and Clark make the following statement, viz.:

"Lastly, we must express our surprise that in his report on the London anchor testing machine, dated 1st November 1865, the engineer to the Board of Trade

should have enumerated defects which could not have fallen under his own observation, because, although they once existed, they had been already rectified at the instance of your engineer."

On this statement we have to remark as follows, viz., the defects above alluded to consisted of a defective main fulcrum, or knife-edge, to the hydraulic lever, a defective plunger to give action to the lever, and inaccurate weights.

On the 29th August 1865, the following note was addressed to the manager of Messrs. Maudslay and Field:

"Shall be glad if you will let me know when the other testing machine at Lloyd's will be ready. I hope when that is complete Lloyd's Committee will allow you to make such additions as will enable the tester to work the machines in a proper and efficient manner.

(signed) "R. Galloway."

The following are the copies of notes made on various visits.

"On the 3d October following, the new main fulcrum, or knife-edge, fitted to the hydraulic lever of the anchor machine, was examined at the works of Messrs. Maudslay and Field, and the balance adjusted, as it could not be done when in its place."

"4th October.—Your inspector attended at the Proving House, Poplar, and found that the knife-edge fulcrum was a little too large to pass into its bearings."

"6th October.—Attended at Poplar, and discovered that the plunger to give action to the hydraulic lever was in very bad condition, and wrongly constructed, recommended a new one should be made. Agreed to."

17th October 1865.—Note addressed to the manager of Messrs. Maudslay and Field:—

"I am obliged to leave London for a few days. Will be here again on Monday next, when I hope the lever at Lloyd's Proving House will be finished.

(signed) "R. Galloway."

"23d October.—Attended at Lloyd's Proving House, Poplar, adjusting the weights for hydraulic lever of anchor machine." And again on the 31st October, when the defects referred to by Messrs. Bidder, Hawksley and Clark, were rectified, the whole being effected under the inspection of your inspector.

To sum up: in the first place, it was found that the lever did not work freely on the knife edge fulcrum; in the second place, that in the small plunger the friction was so great as to cause an error of several tons; and last, but not least, the weights were incorrect.

It will from the above be seen that Messrs. Bidder, Hawksley and Clark have been utterly misinformed, that "the engineer to the Board of Trade enumerated defects which could not have fallen under his own observation."

The defects did fall under "his own observation," and were rectified under his directions.

There can be no doubt, as we have said above, that the objections urged against the Poplar machines in 1864 universally and throughout the country, cannot be urged now that they have been altered, and now that they have received the Board of Trade license.

But there can be equally no doubt that it is idle and fallacious to argue, that because there are no objections to them in their present altered and improved condition, there were no objections to them when we saw them in 1864, and that "there is no foundation whatever" (in 1866) "for the doubts thus raised" (in 1864) 'respecting the efficiency of the machinery at Poplar.'

Low Walker Cable Machine.

Messrs. Bidder, Hawksley and Clark, in their report of the 12th March 1866, make the following statements respecting the machine at Low Walker, viz.:—

"It appears that in the cable machine at Low Walker, a very important error pointed out by the engineer to the Board of Trade had been allowed for a considerable time to exist uncorrected. It is certain, however, as appears from the correspondence placed before us, that this error had been detected by your engineer

engineer before it had been observed by the engineer of the Board of Trade, indeed, almost as soon as the machine was erected; but that the necessary alterations directed by your officer had not been carried into effect by the persons in charge. The fact, that for so long a period as several months, all cables tested at this machine must have been subjected to a strain not less than 26 per cent. greater than that described as the Admiralty proof, without the error being discovered by the chain makers, is singularly confirmatory of our view that philosophical accuracy is not practically necessary for the purposes of your license."

On this statement we have to remark, that the machine at Low Walker had been approved and passed by the Committee of Lloyd's Register, and was at work under their sanction prior to 17th July 1865. That on the 17th July 1865, it was inspected for a Board of Trade license; that on that date the dead weighted and hydraulic levers were examined, when it was found that the hydraulic lever at work on the machine approved by Lloyd's Committee was 26½ per cent. in error.

That, on this error being detected, it was pointed out to the superintendent engineer to the company, the superintendent engineer to makers of the machine, and to several others. They all doubted the calculations which called in question the accuracy of the hydraulic lever. No person connected with the works appeared to know, or would believe, that it existed.

To convince them, the original calculations made by the manufacturers of the machine were sent for, and, on going over them, the error was found and pointed out by your inspector, and admitted.

This view would appear to be confirmed by the original calculations appended, which were handed to us by Mr. Clarke. In these calculations the corrections do not exist, and it was, (he states), a copy of the appended paper that he sent to Mr. Gladstone; whereas it appears, from a memorandum signed by Mr. Gladstone (see p. 50 of the pamphlet circulated by Lloyd's Register*), that "the appended calculations (as corrected) came with" a letter from Mr. Clarke on the 26th October 1864.

* See page 19 in this Return.

As this matter will doubtless be investigated by the directors of the company at Low Walker, we feel that it would be out of place and indelicate on our part to make any further remarks on it.

Netherton Machine.

As regards this machine, Messrs. Bidder, Hawksley and Clark say, "That the statement that the hydraulic lever was altered, so that it now agrees with the dead weight levers, is not confirmed by their own investigations, but that, on the contrary, they found that extensive alterations had been found to be necessary in the dead weight machine subsequently applied."

On this statement we have to remark, 1st. That this machine had been approved by the Committee of Lloyd's Register a considerable time before the Board of Trade license was granted. That subsequently to this approval of it, and on the 15th August 1865, the dead weight levers were finished and were accurately adjusted.

That after these levers had been accurately adjusted, the hydraulic lever was tested by them, and it was found to be 10 per cent. lighter. That before your inspector granted his certificate under the Act, the hydraulic lever was altered to agree with the dead weight levers, that is to say, it was made to indicate a strain 10 per cent. heavier than the strain exerted by the machine, as approved by the Committee of Lloyd's Register. And that the hydraulic lever, as passed by your inspector, has not been altered since he passed it.

If Messrs. Bidder, Hawksley and Clark have, in their investigations, found that the dead weight levers have been altered, those alterations have been made without the knowledge of Mr. Bloomer, the chairman of the company, and without the knowledge of your inspector, or of the Board of Trade.

Our view is strongly confirmed by a written statement made by Mr. Bloomer, on the 31st ultimo, of which the following is a copy:—

"Certain it is that the dead weight levers are as Mr. Galloway left them, and that they were not set to the hydraulic levers."

The machine, as approved at Netherton by the Committee of Lloyd's Register,

gister, before the dead weight levers were applied, exerted a strain of 36½ per cent. less than the strain exerted at the machine approved by them at Low Walker.

This difference could not, of course, be passed over by the Board of Trade inspector, since the first requisite for the proper working of Mr. Laird's Act is, as the consulting engineer of Lloyd's has stated, "that there should be uniform rules of action in all accepted licensed machines." Those uniform rules must, of course, insure the Admiralty test.

Tipton Machine.

The machine at Tipton, after being approved by the Committee of Lloyd's Register, was, on examination for a Board of Trade license, found to be inaccurate. The hydraulic lever, approved by Lloyd's Register, indicated 10 per cent. above the Admiralty proof; so that, between Tipton and Netherton, there was a difference of 20 per cent. Messrs. Bidder, Hawksley and Clark have visited the machine, but are silent respecting it.

IV.—OTHER MACHINES LICENSED BY LLOYD'S COMMITTEE.

In concluding their Report to the Committee of Lloyd's Register, these gentlemen "beg to express their unanimous opinion that the several machines licensed by the authority of Lloyd's Committee, are not only sufficient for the purposes intended by that Committee, but also for those of the manufacturers and users of chain cables and anchors."

— If this remark had been applied only to the machines visited by Messrs. Bidder, Hawksley and Clark, viz., those at Poplar, Tipton, and Netherton, it would have remained unnoticed by us, because it would then be an expression of opinion in favour of machines at those places which have already received the Board of Trade license; but as it includes all machines that have been licensed by the Committee of Lloyd's Register, and as nearly all those machines have subsequently been refused a license by the Board of Trade, we cannot pass by the matter in silence.

We will take some of these other machines *seriatim*, beginning with the machine at—

Liverpool.

§ This machine, after being passed by the Committee of Lloyd's Register, as appears by their printed advertisement annexed, was inspected for a Board of Trade license under the Act, when it was found, amongst other defects, that although it was intended to test 15 fathoms of chain, the bed of the machine was only 12½ fathoms long. This could not be passed by the Board of Trade. This bed, as it could not put the Admiralty test on 15 fathoms of chain at one pull, had to be altered and lengthened.

Llanelly.

The machine at Llanelly, passed and approved by Lloyd's Committee as sufficient for their purposes, was, on examination by your inspector, found to be utterly at variance with the detailed conditions, and therefore useless as a public machine. Amongst other defects, it was found that for a 15 fathoms chain, which (as we have shown) will sometimes stretch six feet, it could only exert a pull of three feet. This machine has not been licensed by the Board of Trade yet, but is advertised under the authority of Lloyd's Committee.

Bristol and Jersey.

The Bristol machine was passed by the Committee of Lloyd's Register, and on subsequent examination for a Board of Trade license, it was found, amongst other defects, that no examining bench had been fitted, and the same may be said as regards the machine at Jersey.

The machine at Jersey cannot be licensed by the Board of Trade, but is working under the authority of the Committee of Lloyd's Register.

Orders have, however, been given for everything that the Board of Trade require, and the owners there intend to apply for a license.

With

With respect to the examining benches we must remark, that we do not agree with Mr. Gladstone when he says that, "As to proving, after blacking, or painting, and other trifling matters, they are so insignificant as to be beneath observation."

The Board of Trade regulations require an examining bench to be provided in a light place, for the purpose of examining the chains "after they are tested, and before they are blacked"; we are persuaded from the almost unanimous opinion expressed on this point that the test by tensile strain is valueless, and even mischievous, unless it is made before the chain is blacked, and is followed by a critical and searching examination of each link.

Some makers of chains have expressed a positive opinion that fully 50 per cent. of defects in chain cables are discovered after the chain has been subjected to the Admiralty proof, and whilst under examination before being blacked.

In proof of this we may mention, as a case in point (besides that of the chains of the "Pera," above referred to, and of the "Porchester"), a case which happened at Lloyd's machine, Low Walker; it is as follows: a chain that had been previously blacked, was proved at this proving establishment, and forwarded to a ship at Guernsey; a man on board the vessel on overhauling the chain, after the blacking was shaken out, discovered a crack in one of the end links, and, upon further examination, discovered another crack partly hid by the blacking. This matter was reported to Lloyd's, the chain was sent back, the defective links were cut out, and it was retested.

CONCLUSION.

In conclusion, we have to state that, under the recent Act, the duties of the Board of Trade Inspector are clear and unmistakable; he cannot certify a machine unless and until he is satisfied that that machine is capable of subjecting chain cables tested at it to the tensile strain required by the Act, viz., the Admiralty test; and when he knows that machines can be made, and are without difficulty made to exert that tensile strain, he is not justified in passing any machine unless it does exert it.

Messrs. Bidder, Hawksley and Clark say, "That the discrepancies between the calculations laid before us, with respect to the weights to be employed to give the testing strains, are generally very insignificant in amount, and of no real importance in practice, and that we think it would be advisable in future that your engineer should not content himself by correspondence on matters involving large consequences, but that, on the contrary, he should be instructed and authorised, before recommending the grant of a Lloyd's license, to see that his requirements had been actually complied with."

On this we have to remark, that no calculations have been laid before these gentlemen, or before the Committee of Lloyd's Register, by the Board of Trade; and that, with the exception of the machine at Low Walker, we never impugned the correctness of the calculations on which the Committee of Lloyd's Register have granted their licenses. Our doubt has all along been, and still is, whether those "calculations" agree with the actual machines.

We have also to remark, that it would almost appear, from the passage quoted above, that the Committee of Lloyd's Register have approved of machines, on being satisfied with the drawings.

On the other hand, the Board of Trade only grant a license on calculations based on actual measurements taken from the machine itself. It is well known that machines of this kind do not always agree with the drawings, and that measurements of the parts of the machine itself can alone be relied on.

The Board of Trade license the machine itself, whereas it would almost appear that the Committee of Lloyd's Register license the drawings, without ascertaining that the machine corresponds with the drawings.

When it appears from the report of the eminent advisers consulted by the Committee of Lloyd's Register, that that Committee had acted properly in licensing machines that do not exert the Admiralty strain, and cannot comply with the conditions issued by the Board of Trade, we can only come to the conclusion that the objects and functions of the Board of Trade, and the objects and functions of the Committee of Lloyd's Register, in regard to testing establishments, are totally distinct. On the one hand, the Board of Trade con-

ditions require a uniform practice, a uniform length, and a uniform test, throughout the United Kingdom; and, on the other hand, the Committee of Lloyd's Register approve of machines with beds varying from 12½ to 75 fathoms in length, exerting strains varying in amount from 10 per cent. under, to 26½ per cent. over, the Admiralty proof; whilst their consulting engineer states in a letter, addressed to this Board, that proper "instruments must be used," and that there should be "uniform rules of action in all accepted and licensed machines." In this we quite agree with Mr. Gladstone.

The difference of practice between the Board of Trade and Lloyd's Register acts in this manner: the Board of Trade have licensed the machine belonging to Messrs. Brown, Lenox and Co. (and this was the first machine to obtain a license), but the Committee of Lloyd's Register do not recognise it. The Committee of Lloyd's Register, on the other hand, have passed the machines at Llanelly and elsewhere, which the Board of Trade Inspector cannot certify.

The question for the Board of Trade and the Committee of Lloyd's Register is, therefore, we would venture to submit, not whether the Board of Trade Inspector has or has not done right, or whether the consulting engineer of the Committee of Lloyd's Register has or has not done right, but whether for the sake of uniformity the Committee of Lloyd's Register should or should not direct their officers, like the officers of all other proprietors of testing machines, to be guided by the regulations issued by the Board of Trade under the authority of an Act of Parliament, and after careful consideration, and by the help of the best professional assistance and experience to be obtained.

We have, &c.
(signed) *R. Galloway.*
Thomas Gray.

P.S.—Appended (Enclosure No. 2) is a paper handed to us by Mr. Clarke, the engineer to the directors of the machine at Low Walker. This paper purports to contain the original calculations made by Mr. Gibson and approved by Mr. Clarke.

R. G.
T. G.

Enclosure 1, in No. 12.

(W.—2481.)

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

Anchors and Cables.

IN the year 1863, the committee passed a resolution to the effect that on and after the 1st July 1864, "all anchors and chains supplied to ships claiming to be classed with the figure 1 in the register book of this society, must be tested up to the Admiralty proof, at a machine under the control and superintendence of some responsible public body so as to enable it to be recognised as a public machine;" and their attention having been called, by recent proceedings in Parliament, to the fact that several chain and anchor manufacturers have applied to have their private testing machines licensed by the Board of Trade, under the Chain and Anchor Testing Act, and being desirous of obviating inconveniences to parties who may be led to suppose that the Act alluded to will induce the committee to abrogate the foregoing resolution,—

Notice is hereby given, that under a deep sense of the absolute necessity of requiring that the proving of anchors and chains should be conducted at a public machine—and not by private individuals or firms,—the committee will adhere strictly to the resolution quoted above,

The following public chain and anchor testing machines, approved and recognised by the committee, are now in operation, viz.:—

London.—Lloyd's Chain and Anchor Proving House, Poplar; superintendent, Mr. Thos. M. Gladstone, C.E.

Liverpool.—Mersey Docks and Harbour Boards Chain and Anchor Testing Machines; superintendents, Mr. W. Macdonald and Mr. James Haslam.

Tyne.

Tyne.—Lloyd's Tyne Public Chain and Anchor Proving House (at Low Walker); superintendent, Mr. Robert Burrell.

Sunderland.—Sunderland Public Chain and Anchor Testing House; superintendent, Mr. John Thompson.

Tipton.—Tipton Proving Machine, erected by the Staffordshire Public Chain and Anchor Testing Company (Limited); superintendent, Mr. David Logan.

Netherton.—Netherton Proving Machine, erected by the Staffordshire Public Chain and Anchor Testing Company (Limited); superintendent, Mr. Samuel Brittain.

Jersey.—Jersey Mutual Insurance Company's Machine; superintendent, Mr. George Ennis.

Llanelly.—Llanelly Public Chain and Anchor Testing Machine, belonging to the Harbour Commissioners, Llanelly; superintendent, Mr. Bowen.

By order of the Committee,
(signed) *George R. Seyfang*, Secretary.

No. 2, White Lion Court, Cornhill, London, E.C.
18 May 1865.

Mem.—In cases where ships have been supplied with anchors and cables which have been tested at a *public machine*, the fact will be noted in the Register Book thus, (A. & C. P.), signifying that the Anchors and Chains have been so proved.

Enclosure 2, in No. 12.

(W.—2290.)

CHAIN TEST.

Cylinder $18\frac{1}{2}$ " = 261.5672Rod - $7\frac{1}{2}$ " = 44.1787

217.4085 Area of Piston.

$$217.4085 \over 2240.000 \left(13.3185 \text{ lbs. per square inch, to give one ton on the chain.} \right)$$

$$\begin{array}{r} \cdot \cdot 6591500 \\ 6522255 \end{array}$$

$$\begin{array}{r} \cdot \cdot 6924500 \\ 6522255 \end{array}$$

$$\begin{array}{r} \cdot 4022450 \\ 2174085 \end{array}$$

$$\begin{array}{r} 18483650 \\ 17392680 \end{array}$$

$$\begin{array}{r} \cdot 10909700 \\ 10870425 \end{array}$$

$$\cdot \cdot \cdot 39275$$

13.238589

Lever 24 to 1.

24

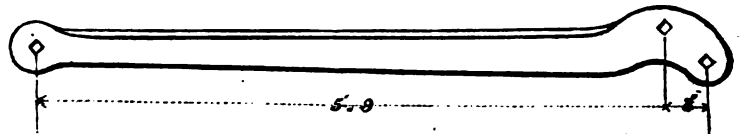
55160 lbs. to give one ton on lever end.

$$\begin{array}{r} 2240 \\ 300 \end{array}$$

$$217.4085 \over 672000.0 \left(3.090.9 \text{ lbs. per square inch on piston to give 300 tons.} \right)$$

$$\begin{array}{r} \cdot 19774500 \\ 19566765 \end{array}$$

$$\begin{array}{r} \cdot \cdot 20778500 \\ 19566765 \end{array}$$

$$\cdot 1206785$$
Valve $1\frac{1}{8}$ " dr. stiff = 1 in.

ANCHOR TEST.

Cylinder $13\frac{1}{8}$ " = 134.012Rod - $5\frac{1}{2}$ " = 23.7583

110.2587 Area of Piston.

$$110.2587 \over 2240.000 \left(20.3167 \text{ lbs. per square inch, to give one ton on the chain.} \right)$$

$$\begin{array}{r} \cdot \cdot 3492600 \\ 3307611 \end{array}$$

$$\begin{array}{r} \cdot 1849890 \\ 1102537 \end{array}$$

$$\begin{array}{r} \cdot 7473580 \\ 6615222 \end{array}$$

$$\begin{array}{r} \cdot 8583080 \\ 7717759 \end{array}$$

$$\cdot 865321$$

20.3167

Lever 12 to 1.

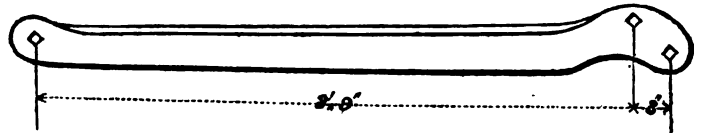
12

1.693 lbs. to give one ton on lever end.

$$\begin{array}{r} 1.693 \\ 4 \end{array}$$

$$\begin{array}{r} 2.772 \\ 4 \end{array}$$

11.088 = to 1 lb. 11 oz.



This paper was handed to me by Mr. Clarke on the 17th April 1866. He stated that it is the calculation made by Mr. Gibson for the lever (hydraulic) of the Low Walker Machine, and that he sent a copy of this paper as it stands to Mr. Gladstone, without any corrections whatever.

(signed) Thomas Gray.

This paper was given to Mr. Gray on the date above named, and the above statements were made in my presence.

(signed) R. Galloway, 7 April 1866.

— No. 13 —

The Secretary of the Board of Trade to the Secretary of Lloyd's Tyne Public Chain and Anchor Testing Company (Limited).

Sir,

Board of Trade, Whitehall, 8 May 1866.

I AM directed by the Board of Trade to inform you that a question has arisen whether Mr. Galloway, the Inspector appointed by this Board, or Mr. Gladstone, the Consulting Engineer of Lloyd's Register, first discovered an error of 26½ per cent. in the machine at Low Walker. Mr. Galloway's reports, and Mr. Gladstone's remarks thereon, are contained in the enclosed paper, at pages 45 to 53; and I am to request that you will move the Board of Directors to be so good as to furnish this Board with any evidence on the subject that may be in their possession.

For Enclosure, see
Enclosure in No. 7.

I am, &c.
(signed) T. H. Farrer.

— No. 14 —

(W. 2433.)

The Secretary of Lloyd's Tyne Public Chain and Anchor Testing Company (Limited) to the Secretary of the Board of Trade.

Proving House, Low Walker, near Newcastle-on-Tyne,

9 May 1866.

Sir,

I BEG to acknowledge the receipt of your letter of yesterday's date (2065 W) with a copy of a pamphlet relating to proving houses. I shall submit these to the Directors at their next meeting, and again communicate with you on receiving their instructions.

I remain, &c.
(signed) Frank Carr, Secretary.

— No. 15 —

(W. 2470.)

The Secretary of Lloyd's Register to the Secretary of the Board of Trade.

Lloyd's Register of British and Foreign Shipping,
2, White Lion Court, Cornhill, E.C.

Sir,

10 May 1866.

I DULY received your letter of the 4th instant, stating that the report of Messrs. Hawksley, Bidder, and Clark, on the subject of chain and anchor proving establishments, &c., has been referred to Sir William Armstrong, to the Mersey Dock and Harbour Board, to the directors of the machine at Low Walker, and to Messrs. Galloway and Gray; and requesting to be furnished with some further information in respect to the proving machine at Low Walker, and copies, also, of some letters, which are not included in the correspondence, which has been printed by order of this Committee; and to acquaint you that Mr. Gladstone, the society's engineer, has been instructed to furnish the information and documents required, on the receipt of which they shall be immediately forwarded to you.

Referring to the remarks in your letter, in which you advert to the correspondence in question as having been "printed and circulated" by the Committee, I am instructed to add that up to the present time but few copies have been issued, and those only to the members of the Committee and the secretaries of the outport proving houses.

As, however, the correspondence in an incomplete state has been printed by order of the House of Commons, the Committee will deem it necessary to issue it in its more perfect form, printed as by their directions.

I am, &c.
(signed) Geo. B. Seyfang, Secretary.

— No. 16. —

(W. 2477.)

Sir *W. Armstrong* to the Secretary of the Board of Trade.

Newcastle-upon-Tyne,

12 May 1866.

Sir,

I HAVE the honour to acknowledge the receipt of your letter of the 27th ult., which was accompanied by a copy of the report of Messrs. Bidder, Hawksley, and Clark on the mode of testing chain cables and anchors, as conducted under the direction of the Committee of Lloyd's Register of British and Foreign Shipping.

In conformity with the request contained in your letter, I will now proceed to make a few observations on the mechanical points to which you direct my attention.

I quite agree with the authors of the report, that an hydraulic indicator, "if carefully made and adjusted," is a satisfactory method of determining the amount of large strains exerted by testing machines; but I consider a provision to be necessary to prove the adjustment, not only in the first instance, but also from time to time, during the use of the machine. I therefore do not concur in the opinion expressed in the report, that the lever and dead weight machine is of "trivial value."

My views on that subject are fully set forth in a paper which I communicated last year to the British Association; and I feel that I cannot do better than quote my observations on the point from that paper.

On the question of the necessity of having a lever apparatus, in addition to the hydraulic indicator, I there stated, that "although an hydraulic indicator, properly constructed and correctly adjusted in regard to its friction, may be safely relied upon as indicating with sufficient precision the strain exerted by the machine, yet for the purpose of ascertaining in the first instance when correct adjustment has been attained, and also of detecting any discrepancy which may subsequently arise from dirt upon the ram or plunger, or from any other cause producing irregular friction, it is necessary that every machine should be provided with a lever indicator, to which the chain may be directly applied, and the strain ascertained by the lifting of a weight. Such an apparatus requires to be accurately fitted with knife-edge bearings, in order to afford delicate indications; but as these are liable to deterioration by too frequent use, it is better to reserve the lever apparatus as a standard of reference for adjusting the hydraulic indicator, which is not liable to deterioration by use. It is not necessary that the lever indicator should range as high as the hydraulic indicator, for if the two indicators register alike through a sufficient series of the lower strains, no discrepancy would be manifested if the comparison were carried to the highest powers of the machine."

It seems to be admitted by the engineer's report to Lloyd's Committee, that some mode of checking and adjusting the hydraulic indicator ought to be adopted, because it is said that a less costly and more useful check would be afforded by substituting for the compound lever machine, an additional cylinder piston and lever working with oil to the full extent of the pressure. I am not prepared to say that the lever and dead weight arrangement is the only one that could possibly be devised for the purpose, but it is the only one which is in actual use. The Board of Trade cannot be expected to judge of inventions for this purpose before they are reduced to practice; and it will be time enough to give their sanction to the use of the proposed substitute after it has been made and tried, and met with general approval. There are many points about such an apparatus which, in my opinion, would require much consideration, and probably many experiments to make practicable. The oil in the cylinder would have to receive its pressure by the strain on the chain, and not directly by the pressure of the water, otherwise it would not fulfil the conditions satisfied by the lever arrangement, and after all it would be a question whether this additional indicator would not in its turn require a further check to keep it in adjustment.

With regard to the point that the Board of Trade regulations only require the lever apparatus to range to one-fourth of the maximum strain, for which the hydraulic machine is licensed, I would remark that the friction of the indicating plunger being, as the report appears to admit, proportionate to the pressure, I

am

am at a loss to conceive how the two modes of determining the strain could agree through one series of tests, and disagree through another. In my opinion, if agreement be established by trials, ranging up to one-fourth the maximum strain, the continued accuracy of the indicating plunger may be relied upon up to the highest limit of the testing machine.

I am at variance also with the authors of the report on the question of friction. They say, as the error attributable to friction increases with the pressure, no accurate compensation can be effected. I, on the other hand, contend that if the hydraulic press and the hydraulic indicator be both made watertight by the usual expedient of a leather collar, the friction in both will increase with the pressure; but, at the same time, if attention be paid to the necessary adjustment of the extent of rubbing surface of the collars, the friction of the press and of the indicator will remain in harmony through all pressures. It is one of the principal objects of the lever apparatus to enable this adjustment to be made, and if it be neglected great discrepancies may arise. The influence of friction in the operation of testing is very important, and it is necessary to understand the relationship which ought to exist between the friction of the press and that of the indicator. Upon this point I will again quote from the paper to which I have already referred. Alluding to an hydraulic indicator on the plunger principle, I there stated that "A plunger without any friction would give untrue indications of the strain unless the press were also without friction; but friction cannot be avoided in the press, and therefore friction becomes a necessary element of accuracy in an indicating plunger. To make this more apparent, it is only necessary to consider that in the press the friction of the packing * lessens the tension exerted on the chain, while in the case of the indicator the friction of the packing lessens the weight necessary to indicate the pressure. If, therefore, these two frictions be in harmony, the load on the indicator will be diminished in the same proportion as the tension on the chain, and thus a correct indication of the strain upon the chain will be obtained.

"The proper and usual packing for the hydraulic press is a cupped leather, but as the lip of the leather is pressed against the surface of the ram by the action of the water, the amount of its friction varies directly as the pressure. It is therefore necessary that the indicating plunger should also be packed with a cupped leather, in order that its friction may likewise vary directly as the pressure. But as the ratio of circumference to area is very much greater in the small ram of the indicator than in the large ram of the press, it is obvious that with similar leathers the relative friction would be widely different in the two cases. The friction may, however, be brought to a proper adjustment by reducing the breadth of the lip in the leather of the indicator until its friction is in unison with that of the press leather. This adjustment should be made when the press ram and the indicator plunger are both perfectly clean and free from any lubricating substance, and in no subsequent use of the machine should either oil or grease be applied to these parts. The effect of employing a lubricator is to diminish the friction in the first instance, but afterwards to increase it, because the unctuous character of the lubricant is soon exchanged for a stickiness which produces an opposite effect. In fact, when oil or grease are used the friction becomes so irregular as to render impossible an accurate correspondence between the press and the indicator."

In the report to Lloyd's Committee it is remarked, in reference to the small importance of great accuracy in the hydraulic indicator, "that as the pumps are applied until the lever is lifted, and continue working until the water is turned off, in obedience to a signal made either by an attendant or by an automatic stroke on a bell, but not instantaneously, the error occasioned by a few additional strokes of the pump is far greater than can arise from the estimated amount of the friction."

Upon this passage I would remark that I should consider a testing machine very imperfectly constructed if it did not afford the means of instantly relieving the pressure independently of stopping the pumps.

The authors of the report object to the "pendulum indicator," as being uncertain on account of oscillation, and practically valueless as a check upon the operation of the other machines.

They

* "Packing" is the technical term for the substance by which the apparatus is made watertight.

They also say that this instrument answers no useful purpose that would not be better fulfilled by the ordinary inexpensive spring pressure gauge (fitted with a register) usually applied to hydraulic apparatus.

I do not know upon what experience of the pendulum indicator these remarks are founded, but I am informed that at the chain testing machine at Birkenhead, under the direction of the Mersey Harbour Trustees, the action of the pendulum indicator is found to be so trustworthy and satisfactory that, although only intended to indicate the strain at the moment of fracture, it is relied upon for determining the ultimate proof strain as well, thereby superseding the use of the separate weighted plunger provided for that purpose. As to the preference which is expressed in the report for the ordinary spring pressure gauge, it was only after trying that species of gauge for the Birkenhead machine, and finding it defective, that the pendulum gauge was resorted to. When the spring gauge is adapted for the high pressures required, the divisions of the scale are so small that the movements of the pointer are very inaccurately read, besides which the instrument is liable to get out of adjustment by over-strain.

With regard to the limitations of length of chain to be tested at one time, I cannot see that there would be any advantage in having machines adapted for greater length than 15 fathoms, which is the length in which chains are usually made. The stretch of new chain not previously tested is so considerable that the press required for proving greater lengths would require to be made inconveniently long, or the operation would have to be effected by taking repeated holds of the chain. To prevent this alternative I think the Board of Trade have acted judiciously in imposing a limit of length, and they certainly could not have named a more convenient limit than the length in which chains are almost invariably brought to the testing machine.

In conclusion I have only to remark, that I do not yet see any reason for modifying my opinion as to the correctness and fairness of the general conditions issued by the Board of Trade, but it is quite possible that improved methods of proceeding may, from time to time, be introduced, and when these are substantiated by trial, they will be entitled to receive the consideration of the Board.

I have, &c.
(signed) *W. G. Armstrong.*

— No. 17. —

(W. 2513).

The Secretary of Lloyd's Tyne Public Chain and Anchor Testing Company (Limited), to the Secretary of the Board of Trade.

Proving House, Low Walker, near Newcastle-on-Tyne,
16 May 1866.

Sir,

IN reply to your letter of the 8th May (2065 W.), I am instructed by the Directors to forward to you (1) the enclosed copies of correspondence; (2) of an extract from the minutes of the Company; and (3), copy of a statement made by the Company's engineer.

I remain, &c.
(signed) *Frank Carr, Secretary.*

Enclosure 1, in No. 17.

(1.)

Lloyd's Register of British and Foreign Shipping; Office, 2, White Lion Court, Cornhill, London. E.C.

Proving House, West India Dock, New Road, Poplar, E.
London, 25 October 1864.

Dear Sir,

By this post I have sent to Mr. Burrell Mr. Clarke's calculations on the levers of the Tyne Testing Machine, which need correction, and the weights regulated accordingly.

If this is done at once, and I have from Mr. Burrell, by return of post, information to that effect, I can report upon the machine to our Committee on Thursday, otherwise not until next week.

F. Carr, Esq., Secretary to
Lloyd's Public Testing Company,
Newcastle-on-Tyne

Yours, &c.
(signed) *Thomas M. Gladstone.*

(2.)

Proving House, Low Walker, near Newcastle-on-Tyne.

26 October 1864.

Dear Sir,

I AM duly in receipt of your favour of yesterday; Mr. Burrell and Mr. Clarke have gone into the matter to which you have referred, and both of them write you by this post on the subject. I trust their explanation will prove satisfactory to you, and you will be able to report to the Committee to-morrow as you mention.

Thomas M. Gladstone, Esq.,
Lloyd's Register, Cornhill, London.

I remain, &c.
(signed) *Frank Carr*, Secretary.

(3.)

Lloyd's Register of British and Foreign Shipping; Office, 2, White Lion Court, Cornhill,
London, E.C.

Proving House, West India Dock, New Road, Poplar, E.

London, 25 October 1864.

Dear Sir,

I ENCLOSE you the calculations from Mr. Clarke on the Tyne machine.

You will see at once the levers are in error, therefore the whole wrong.

Not a day should be lost to have this corrected, or all your proving is in error.

It is only to point it out to the makers to have it corrected, and when done returned to me, to enable me to report on Thursday.

Mr. Burrell.

Yours, &c.
(signed) *Thomas M. Gladstone*.

(4.)

Lloyd's Register of British and Foreign Shipping; Office, 2, White Lion Court, Cornhill,
London, E.C.

Proving House, West India Dock, New Road, Poplar, E.

London, 27 October 1864.

Dear Sir,

I HAVE your favour, and also one from Mr. Clarke, which explains my mistake, and I report in favour of your machine to-day to the Committee.

Mr. Robert Burrell,
Lloyd's Tyne Testing Company,
Walker, near Newcastle-on-Tyne.

Yours, &c.
(signed) *Thomas M. Gladstone*.

Enclosure 2, in No. 17.

EXTRACT from the Minutes of a Meeting of the Directors of Lloyd's Tyne Public Chain and Anchor Testing Company (Limited), held in their Offices, Custom House Chambers, Quayside, Newcastle-upon-Tyne, on Saturday, the 29th October 1864, at Three o'clock in the Afternoon.

GEORGE CRAWSHAY, Junior, Esq., Chairman.

"Mr. Burrell produced Mr. Gladstone's letters, which he had received from him, relative to the accuracy of the test machine."

"Resolved,

"On the motion of the Chairman, seconded by Mr. Brown, that the correspondence between Mr. Burrell and Mr. Gladstone be inserted in the Minute Book."

(Here is inserted a copy of Mr. Gladstone's letter to Mr. Burrell, of the 25th October 1864, being No. 3, of the foregoing correspondence.)

"Mr. Burrell, in reply, stated that, on receiving the above, he, in company with Mr. Clarke the engineer, and Mr. Gibson, examined the machine carefully, and found it quite correct, and found that Mr. Gladstone had made a mistake in the position of the fulcrum of the lever, having from the drawings been misled, by not fixing on the proper point for fulcrum."

(Here is inserted a copy of Mr. Gladstone's letter to Mr. Burrell, of the 27th October 1864, being No. 4 of the foregoing correspondence.)

I hereby certify that the above are correct copies of letters in the possession of this Company; of the press copy of the Secretary's letter to Mr. Gladstone, of the 26th October 1864, made in the Company's letter-copying-book; and of an extract from the minutes of the meeting of directors, held on the 29th October 1864.

29th October 1864.

Frank Carr, Secretary,
16th May 1866.

Enclosure 3, in No. 17.

The Chairman, Lloyd's Tyne Public Chain and Anchor Testing Company (Limited).

Sir,

Gateshead, 14 May 1866.

IN compliance with your request, I beg to hand you my report upon the section of printed correspondence between Lloyd's Register and the Board of Trade, bearing upon the Walker machine.

In reference to Mr. Galloway finding the check levers only 5 per cent. of machine's power, I may say that these levers were fitted and in operation before the Board of Trade regulations were issued, and it was not thought desirable to alter them till Mr. Galloway inspected the machine, and pointed out what really were the proper requirements.

In reference to error in calculations of hydraulic lever, and which now forms the whole matter in dispute, I shall give the whole of the transactions as they took place.

Mr. Gladstone came down in October 1864 to examine the machines; I met him at the works, when he proceeded to break several pattern links which he had provided for the purpose.

He seemed satisfied with the cable machine, but he requested me to send him the drawings and calculations of the hydraulic levers to London without delay, as he wanted to report upon the machines at once. Without loss of time, I waited upon the makers, and got the calculations of the levers from them, and, being in a hurry, I must have sent them away without checking them over, or I may have looked them over too hastily to detect the error, which is a clerical error, and a very peculiar one.

Mr. Gladstone did not acknowledge the receipt of this; but on the 26th of October, Mr. Burrell handed me a letter (inclosing the calculations which I had sent to Mr. Gladstone) from Mr. Gladstone, in which he (Mr. Gladstone) stated, that the calculations of the levers were in error, and consequently the whole wrong. On the sheet of calculations were noted by Mr. Gladstone (I believe, in pencil), that the cable machine lever should be 23 to 1, instead of 24 to 1, and the anchor machine lever should be 11 to 1, instead of 12 to 1; this, I sincerely believe, was all that was pointed out. I wrote direct to Mr. Gladstone the same day, pointing out that he had mistaken the kind of levers they were (a copy of this letter you have); Mr. Gladstone did not acknowledge this letter, but wrote to Mr. Burrell, or Mr. Carr, acknowledging his mistake (this letter you have). The whole correspondence will bear me out in the above explanation of the circumstances as they took place.

I heard no more about the calculations till Mr. Galloway came down to examine the machines in July 1865. I went down to Walker, and found Mr. Galloway had got the levers examined, and discovered the calculations in regard to the weights to be wrong. This I could not credit till I went over them myself, and found that Mr. Galloway was right; and the contractors at once set about having the weights adjusted, which was done by the following morning.

I now thought the whole thing done with, but heard afterwards, owing to Mr. Galloway's report, the whole matter would be brought up again. Early in November 1865, I learned from Mr. Burrell that Mr. Gladstone wished to see me in London regarding some new testing machinery. Having some business there, I paid Mr. Gladstone a visit on 17th November 1865, when he informed me that the Jersey people were wanting a new cylinder for their machine; but I told him we had had some correspondence with them about it some time before.

He desired me to go with him to Lloyd's offices to look at the calculations I had sent him. We saw Mr. Seyfang, who told me that Mr. Gladstone was then on his trial; that the whole affair was in the hands of three engineers, and Mr. Gladstone would either stand or fall according to their report. My calculations were produced, when, for the first time to my recollection, I saw the alteration of the figures marked on the paper. I must say I was staggered for the moment, not that I doubted my memory in the matter, but it was to see figures there (the same as Mr. Galloway had worked out by his calculations), and said to have been put there by me. Mr. Seyfang asked me if I put these alterations there; I said I did not remember doing so, but remembered distinctly writing to Mr. Gladstone about the proportion of the levers, in which he had been mistaken, but the other I did not remember. Perhaps I did not give the answer so decidedly as I might have done, but the position I then stood in was so unexpected and so delicate that I was perplexed.

I now

I now beg to state, that I am certain that I did not make these alterations. I would suggest that the sheet of my original calculations should be obtained, and then it will be seen if the alterations are in my handwriting, which will clear up the affair. The word "dram" is also used in the alterations; this is a weight we never used till Mr. Galloway came down to examine the machines.

I remain, &c.
(signed) *W. Clarke.*

I hereby certify that the above is a correct copy of the statement of Mr. W. Clarke, dated the 14th May 1866.
16th May 1866.

Frank Carr, Secretary.

— 18. —

(W. 2527.)

Secretary of Lloyd's Register to the Secretary of the Board of Trade.

Lloyd's Register of British and Foreign Shipping,
2, White Lion Court, Cornhill, E.C.

Sir,

16 May 1866.

REFERRING to my letter of the 10th instant, I now have the honour of transmitting to you the following documents, requested in your letter, dated 4th May, viz. :

1. A certified copy of Mr. Gladstone's letter to Mr. Carr, dated 25th October 1864.
2. A certified copy of Mr. Gladstone's letter (dated 16th October 1865), to which Mr. Burrell's letter of the 18th October 1865, is a reply.

I regret that I cannot furnish you with a copy of Mr. Burrell's letter to Mr. Gladstone of the 27th October 1864, as Mr. Gladstone cannot find the original, and Mr. Burrell, in answer to a request for a copy of his communication, states that he has not kept one.

In answer to your inquiry in respect to the " memorandum in italics, on page 50, signed by Mr. Gladstone," having reference to the " corrections marked with a star in page 51," I am directed to acquaint you that the Committee have satisfied themselves that the " & corrections " in question were made by Mr. Gladstone, between the 20th and 25th October 1864.

I am to add that the copy of the original calculations, which bears internal evidence of the above facts, shall be forwarded to you for inspection, if you desire to see it.

I am, &c.
(signed) *Geo. B. Seyfang.*

Enclosure 1, in No. 18.

Dear Sir,

Lloyd's Proving House,
London, 25th October 1864.

By this post, I have sent to Mr. Burrell, Mr. Clarke's calculations on the levers of the Tyne Testing Machine, which need correction, and the weights regulated accordingly.

If this is done at once, and I have from Mr. Burrell, by return of post, information to that effect, I can report upon the machine to our Committee on Thursday, otherwise, not until next week.

F. Carr, Esq.,
Secretary to Lloyd's Public Testing Company,
Newcastle-on-Tyne.

Yours, &c.
(signed) *Thomas M. Gladstone.*

Enclosure 2, in No. 18.

My dear Sir,

City, 5 p.m., 16 October 1865.

I WRITE in haste to ask you to refer to my letter to you of the 25th October 1864, wherein I pointed out certain errors, as affecting the levers and the calculations of Messrs. Benning, Clarke, & Co., at the machine at Low Walker.

In it I direct you to see these made right before I reported; therefore, would you telegraph me, on receipt of this, to inform me why they were not corrected, as they appear, on Mr. Galloway's examination, to have remained with the error still existing.

Don't fail to address to Proving House, and

Robert Burrell, Esq.

Believe me, &c.
(signed) *Thomas M. Gladstone.*

CHAIN CABLES AND ANCHORS.

COPIES of CORRESPONDENCE between the Engineer or Secretary of Lloyd's Register and the Board ; of REPORTS of ENGINEERS called in by Lloyd's Register which have been sent to the Board of Trade ; of CORRESPONDENCE between the Board of Trade and other Persons or Bodies on the same subject ; and, of REPORTS made by the Board of Trade Officers thereon ; &c. (in continuation of Parliamentary Paper, No. 111, of Session 1866.)

(*Mr. Laird.*)

*Ordered, by The House of Commons, to be Printed,
29 May 1866.*

[*Price 6 d.*]

304.

Under 8 oz.

CHAIN CABLES AND ANCHORS.

RETURN to an Order of the Honourable The House of Commons,
dated 16 July 1866: -for,

COPY "of any further CORRESPONDENCE and REPORTS relative to CHAIN CABLES
and ANCHORS (in continuation of Parliamentary Papers, Nos. 111 and 304, of
Session 1866.)"

Board of Trade, }
1 August 1866. }

T. H. FARRER.

— No. 1. —

(W. 2812.)

The Secretary of the Mersey Dock Board to the Secretary of the Board of
Trade.

Sir,

Secretary's Office, Liverpool, 8 June 1866.

IN answer to your letter of the 27th of April last (No. 1679 W.), on proving
establishments' apparatus and machinery, I am instructed by the Committee of
Works of the Mersey Docks and Harbour Board, to whom your letter has been
submitted, to hand you the accompanying copy of the report of the dock engineer,
together with a copy of the letter of Sir W. G. Armstrong, referred to therein, on
the subject.*

* See No. 16, p. 42,
of Parliamentary
Return, No. 304.

I am, &c.

(signed) John Harrison,
Secretary.

Enclosure in No. 1.

The Chairman of the Committee of Works.

Sir,

8 June 1866.

IN compliance with the instructions of the Chairman, with reference to the letter from
the Secretary of the Board of Trade of the 27th April last, to the Dock Secretary, enclo-
sing a copy of a report by Messrs. Bidder, Hawksley, and Clark, civil engineers, who
have been consulted by the Committee of Lloyd's Register with reference to the pro-
ceedings of that Committee in connection with proving establishments' apparatus and
machinery, I beg to submit the following report.

There are certain points on which the Secretary of the Board of Trade requests that
opinions may be given, namely, generally as to the result of our experience and observa-
tions in the working of a proving establishment, fitted strictly in accordance with the
conditions issued by that Board, and specially with reference to the construction of the
machines as regards the necessity, or otherwise, for the dead-weighted levers, the pendulum
indicator, and as to the limitation in length of a cable to be tested to 15 fathoms.

As all these points have a direct bearing on the construction of the apparatus and the
practical working of the proving establishment at Birkenhead, it will be convenient,
perhaps, to give a short account of those works, including a description of the machinery
placed there.

The establishment at Birkenhead occupies an area of 11,200 superficial yards, of which
about 5,000 yards are covered by sheds and buildings. The water frontage to the great
float measures 753 feet. Lines of railway intersecting the premises are laid in communi-
cation with the Birkenhead and Chester line, and thence to the general system of railways
throughout

throughout the country. The buildings comprise: 1st. A reception shed for Chains and Anchors to be tested, containing a 20-ton weighing machine, and overhead travelling Crane. 2d. A Testing House, 133 feet long by 55 feet in width, and which contains two machines for proving up to 300 tons, and 200 tons respectively. 3d. An examining and repairing room, containing two examining benches, 100 feet in length each, and also three smiths' hearths, with hydraulic cranes attached to two of them. 4th. A blacking room, 46 feet by 55 feet, with two furnaces and blacking troughs. 5th. A shed to contain the chains after blacking. 6th. A store shed 224 feet long by 50 feet wide, with water frontage and railway communication for the delivery of chains and anchors, which, having passed through the establishment, are ready to be sent off. 7th. The engine house and apparatus rooms; the first containing two 18-horse duplicated high-pressure steam-engines for working the proving machines, and one 15-horse horizontal high-pressure steam-engine for driving the shafting and revolving capstans; the other rooms contain the boilers, two accumulators, and the hydraulic cylinders, levers, and indicators required for applying the strains, the office department, and stores. Preparation is making for the supply of another machine specially adapted for the proving of anchors, and also of a fourth machine to be devoted entirely to the proving of eyes, rings, bolts, samples of iron, or other materials. Revolving capstans and capstan heads, 24 in number, are suitably placed for transmitting the chains from one point to another throughout the whole range of buildings. A 12½-ton hydraulic crane is fixed on the quay for the convenience of loading or discharging vessels. Overhead cranes command the interior of the sheds, and lines of railway with turntables traverse the whole of the premises.

The entire cost of the buildings and machinery (exclusive of land) when the alterations and additional appliances (which experience has found necessary) are completed, will amount to upwards of 30,000 £.

Although the establishment has been in full operation for three years, it can scarcely be said to have reached a position whereon a report showing the practical and economical working of its machines and appliances can be founded.

The alterations and additions already referred to, are either still in hand or but just completed, and a short time will have to elapse, after all is in working order, before an opinion that may be relied on can be given. But it may be observed that no changes have been proposed, or are contemplated, in the construction of the apparatus comprised in the 200 and 300 tons proving machines, and inasmuch as the value of some of their constituent parts has been questioned by Messrs. Bidder, Hawksley, and Clark, it will be well, perhaps, before referring to Sir W. G. Armstrong's letter to the secretary of the Board of Trade, on the points of objection raised, to describe briefly the measures adopted by the Mersey Board with the view to obtaining for the use of the port the best and most reliable machines that the country could produce.

In June 1860, invitations were issued by the dock engineer, in the form of circular letters to six engineering firms of high standing, requesting tenders for the supply of two chain cable proving machines for the Birkenhead Docks, under the following conditions:— One machine to be capable of exerting any strain up to 300 tons, the other in like manner up to 200 tons; each machine to be provided with a cast-iron table sufficient to receive for proof, at one time at least, 100 feet in length of chain. The proof strain to be applied by hydraulic pressure, and by direct action upon plungers working in cylinders at the end of each table. The amount of applied strain to be regulated by a system of levers with weights and scales, and to be so arranged that on the application of the full proof strain a self-acting motion should ring a bell and shut off all further pressure and action. An apparatus was also to be prepared and applied to each machine, which should accurately register the breaking strain of each cable that may be proved. Then follow particulars as to the engines and boilers, the appliances for moving the chains to and fro and blacking them, the supply of a 12-ton crane, &c., &c., &c., the whole setting forth as fully as possible the various requirements then deemed necessary for the proper working of a first-class Chain Cable Proving Establishment.

In reply to these invitations five tenders were submitted, and, after a careful consideration, the choice fell on the tender of Messrs. Sir W. G. Armstrong & Co., who, although not the lowest to offer, were accepted on the ground of their compliance with the conditions sent to them, and of their having entered so fully and satisfactorily into details, and furnished such complete and valuable information in respect of the work required to be done.

The buildings for the reception of the machinery and development of the establishment were commenced in 1860, and opened in April 1863. On the 26th June 1865, the Board of Trade granted their license for the use of the machines. The machine for 200 tons was licensed at its full power; but the 300 tons machine, in consequence of the failure to procure chains of sufficient strength to test it up to its intended power, was only licensed as a 200 tons machine.

Reverting to the points specially alluded to in the letter from the Secretary of the Board of Trade, namely:—

First. *The value of the dead-weighted levers*—it will have been observed that the levers with weights and scales formed one of the conditions contained in the original circular issued to engineering contractors, and was held to be a provision of high importance in the construction of the machines. Sir W. G. Armstrong, in his letter of the 12th ultimo, to the Secretary of the Board of Trade, before adverted to, has so ably dealt with this point

point that it is unnecessary for me to enlarge on it here, further than to observe that the dead-weight lever accurately constructed is obviously, next to lifting the actual weights, the most perfect arrangement for ascertaining strains that can be introduced. The delicacy of the knife edges is not so well suited for the constant wear and tear of machines in full work, and therefore it is considered best to retain the apparatus as a check on the accuracy of the other appliances.

Second. The *pendulum indicator* was intended to meet the requirements in the original circular, which stipulated that an apparatus should be applied to each machine to register the breaking strain. Whether the apparatus provided by Messrs. Sir W. G. Armstrong & Co. is on the best principle that could possibly be supplied for the purpose, I am not prepared, neither is it necessary for me to say; I only know that the pendulum indicator meets the object for which it was intended, and that it shows admirably the gradually progressive amount of strain that is being applied. Although according to the views set forth in the report in question, the dead-weighted levers are of "trivial value," and the pendulum indicator "practically valueless;" still I do not gather that the authors propose to dispense entirely with appliances of this description; on the contrary, they are of opinion that something else suggested by themselves in each instance would be far less costly and fulfil the purpose better than the means already provided.

On these points I must again refer to the letter of Sir W. G. Armstrong as conclusive in its reply, merely observing with regard to the 25 per cent. range which, in accordance with the conditions issued by the Board of Trade, the dead-weighted lever is to have of the full power of the machine that the range of the lever extends to 100 tons in each of the Birkenhead machines, and consequently 33·3 per cent. on the 300 tons, and 50 per cent. on the 200 tons represents the range of the dead-weighted levers in these machines. Some idea may be formed of the value of this range when it is stated that it has hitherto included, with one exception, the whole of the strains that have had to be applied to Chain Cables sent to the establishment to be tested.

Third. As to the 15-fathom length, I think that practically no more convenient length could have been selected.

A Chain may be supposed of so great a length that the mere weight of itself resting on the ground would be sufficient to resist the proof strain when applied at one end; the end links towards the proving machine would receive the full amount of the test, while on the more remote links the strain would gradually diminish in proportion as the distance from the proving power increased. Perhaps the most perfect machine would be that wherein a chain could be tested link by link; but as this would be manifestly inconvenient and troublesome it is desirable that some more practical and economical means be adopted. The 15 fathoms length with sufficient margin to allow for any probable amount of stretch appears to best meet the case, and is fully borne out by the experience gained in working the Birkenhead machines. As the stretch on a 15-fathom chain amounts sometimes to no less than six feet, some idea may be formed of the length of stroke that would be required in a hydraulic machine to test chains 75 fathoms in length.

Finally, I may observe that although complaints from one or two parties have been occasionally received as to charges, mode of measuring, delay, and other matters connected with the establishment; still there has never been any complaint whatever as to the accuracy of the results or any doubts cast on the efficiency of the machines by which those results are obtained.

As I have referred to Sir W. G. Armstrong's letter to the Secretary of the Board of Trade, dated 12th May 1866, I have thought it desirable to append hereto a copy of that communication; I may also observe that I have read this report to Mr. Macdonald, the superintendent of the proving establishment at Birkenhead, and that he fully concurs in those passages which particularly refer to the business of his department.

I am, &c.

(signed) George Fosbery Lyster,
Engineer to the Dock Estate.

Dockyard, 8 June 1866.

— No. 2. —

(W. 2279.)

The Secretary of the Board of Trade to the Secretary of Lloyd's Register.

Sir,

Board of Trade, Whitehall, 20 June 1866.

WITH reference to the letter from this Department of the 4th ultimo; stating that the report of Messrs. Hawksley, Bidder, and Clark had been referred to the Mersey Dock Board, Sir William Armstrong, and to others, I am now directed by the Board of Trade to enclose, for the information of the Committee of Lloyd's Register of British and Foreign Shipping, copies of the reports and replies received.*

Looking

*For Enclosures, see Parliamentary Return, 304, pages 30, 41 and 42, also Paper No. 1 in this Return.

Looking to the facts and arguments stated in these papers, the Board of Trade are of opinion that they would not be justified in making any alteration in the general rules they have issued on the subject of licenses for testing machines.

Those rules were framed after obtaining the best practical advice, and the result of experience so far confirms them.

I am, &c.
(signed) T. H. Farrer.

— No. 3. —

(W. 2714.)

The Secretary of the Glasgow Anchor and Chain Cable Testing Company (Limited), to the Secretary of the Board of Trade.

Sir,

42, West George Street, Glasgow, 31 May, 1866.

THE testing machine belonging to this company was recently passed (up to 72 tons) by Mr. Galloway, the Inspector of the Board of Trade.

Since then a letter was received from the Committee of Lloyd's, referring to a printed copy of correspondence, reports of engineers, &c., which showed that a difference of opinion existed between their engineer and the engineer of the Board of Trade, and stating that in consequence it would be necessary that Mr. Gladstone should visit the machine here. (The Glasgow machine being one of those sanctioned by the Committee.)

Mr. Gladstone accordingly visited the machine, and reported thereon to the Committee.

I enclose a copy of his report, to which I beg respectfully to refer.

From it you will observe that for the reasons therein stated he requires that this machine should be fitted with a *statical lever* (hydraulic) as he considers the dead-weight levers insufficient.

This, if insisted on, will cause additional expense to this company, and may perhaps render void the license already granted by the Board of Trade, and the Directors consider further that it is very desirable that it be settled whether the Government Inspector is right or not before they make any alterations on the machine.

I have, &c.
(signed) J. Muirhead, Secretary.

Enclosure in No. 3.

COPY of Mr. Gladstone's Report on Glasgow Machine.

"FOUND that the strains were determined by a dead-weight lever of full power; they depend on this alone. However true the dead-weight lever may be made, and however exact in its action (while it is useful for a check) it is very objectionable as a *permanent* means of determining tests whenever violent jerks may arise, as is the case in the fracture of Chain Cables. These soon seriously injure the knife edges from the repeated blows given. In this case two tons weight falls through about two inches space; consequently, on a chain breaking, it is a most destructive and heavy blow, nor can the mode adopted be changed to avoid such seriously violent action.

"Before, therefore, the Glasgow machine be *fully* recognised I would recommend a statical lever (hydraulic) to be applied, as elsewhere, being the only instrument not disturbed in its action by the rebound from any sudden withdrawal of the strain. For the best proportions it should be made 12 to 1, with a fulcrum of six inches. The lever to be scaled up to 10 tons for the sliding weight."

— No. 4. —

(W. 2714.)

The Secretary of the Board of Trade to the Secretary of the Glasgow Anchor and Cable Testing Company (Limited).

Sir,

Board of Trade, Whitehall, 8 June 1866.

I AM directed by the Board of Trade to acknowledge the receipt of your letter of the 31st ultimo, and to enclose for your information a copy of a report received from the inspector of proving establishments on the subject of the objections to the establishment at Glasgow, made by the engineer of Lloyd's Register, and indorsed by the chairman and committee.

A copy of a letter on the same subject from this Board to the Committee of Lloyd's Register is also enclosed.*

* See No. 5
in this Return.

I am, &c.
(signed) T. H. Farrer.

Enclosure in No. 4.

(W. 2793.)

REPORT of the Inspector of Proving Establishments on the Objections made by the Engineer of Lloyd's Register to the Establishment at Glasgow.

I HAVE read Mr. Gladstone's report to Lloyd's on the Glasgow testing machine with some astonishment, because his opinion therein expressed cannot be based on practical experience.

In addition to the full power dead weight levers, there is a pendulum indicator (hydraulic) fitted in the same house; this indicator has a *release* valve under the control of the operator, so that immediately the levers lift this valve is opened and the action of the press ceases.

It is a mistake to say that "*two tons weight falls through about two inches.*" The lever will lift about three-eighths of an inch to assume a horizontal position when the Admiralty strain is on, and the *release* valve is opened, therefore the weights have a very small space to fall through, and, besides, each weight has an india-rubber bed to receive it. Again, for the weights to fall suddenly the chain must break *exactly* at the Admiralty proof, but not once out of a thousand times will this happen; if the chain breaks before the Admiralty proof is on the *weights are not lifted*, hence *they cannot fall*.

2 inches
 $\frac{3}{8}$ inch.

With regard to the lasting of the knife edges, those in the Glasgow machine are 30 inches long, and at the maximum power of the present license each inch of knife edge will have to withstand a strain of *only* 2.4 tons, and when licensed to the full power of the machine, viz. 200 tons, each inch of knife edge will have to bear a strain of 6.66 tons, or, when proving the largest chain in Lloyd's list ($2\frac{1}{4}$ "), the strain on each inch of knife edge will be *three tons*.

30 inches.
72 tons.
 $2\frac{1}{10}$ tons.
 $6\frac{2}{3}$ tons.
8 tons.

The levers of the testing machine at Messrs. Brown, Lenox & Co. have knife edges of seven inches, and a chain has broken on them at 225 tons, and the machine has been tested and licensed to 250 tons; therefore the strain per inch of knife edge is 35.7 tons, yet this machine has been constantly at work for 12 months, and the indication of the levers remained to the last truthful, the knife edges requiring dressing up only, to enable me to renew the certificate. I beg also to state that the testing machine at the works of Messrs. Bayliss, Jones & Bayliss, Wolverhampton, is precisely as the Glasgow machine—it does its work well, has been inspected by Lloyd's engineer, and no objection made to the machine itself.

$35\frac{7}{10}$ tons.

That at the Tipton machine the dead-weight levers and the pendulum indicator are alone used; that at the two Birkenhead machines there are no *hydraulic statical levers*, but that the tests are determined by the pendulum indicator checked by the dead-weight levers; and at the Liverpool machine, also belonging to the Mersey Dock Board, there are *full power dead-weight levers only*; hydraulic power not being used, it is impossible to apply either the pendulum indicator or a *statical lever (hydraulic)*. The Tipton, Birkenhead, and the Liverpool machines are recognized by Lloyd's, and if the objection to the Glasgow machine fitted with dead-weight levers (full power), and pendulum hydraulic indicator, is good and valid, Lloyd's license or approval should be withdrawn from the Liverpool machine, where they have only dead-weight levers, with knife edges; $12\frac{1}{2}$ in. at 72 tons gives $5\frac{1}{2}$ tons per inch of knife edge, yet these levers have worked well for years, and are now in good condition.

$9\frac{1}{2}$ tons.

$7\frac{5}{10}$ tons.
20 tons.

$5\frac{1}{2}$ tons.

As no remark is made as to the accuracy of the dead-weight levers compared with the hydraulic statical lever, I imagine this point is conceded in favour of the former.

In conclusion, I beg to say that from my experience with the hydraulic pendulum indicator,

425.

A 3

indicator, and the hydraulic statical lever, that the indications given by the former are equal in accuracy to those given by the latter; therefore as the Glasgow testing machine is fitted with *full* power dead-weight levers and a pendulum hydraulic indicator, I am of opinion that the machine has all necessary requirements to test Anchors and Cables with accuracy and in accordance with the Act of Parliament.

(signed) *R. Galloway.*

5 June 1866.

— No. 5. —

(W. 2793.)

The Secretary of the Board of Trade to the Secretary of Lloyd's Register.

Sir,

Board of Trade, Whitehall, 7 June 1866.

I AM directed by the Board of Trade to enclose, for the information and consideration of the Committee of Lloyd's Register of British and Foreign Shipping, a copy of a letter and its enclosure received from the Secretary to the Glasgow Anchor and Chain Cable Testing Company (Limited),* from which it appears that although the general conditions issued by this Board have been complied with, and although a license has been granted for the establishment under the Chain Cables and Anchors Act, the Committee of Lloyd's Register have refused to grant an unconditional license for the machine, on the grounds that the dead-weighted levers are insufficient, and that an hydraulic, or, as it is called, a statical lever, must be now fitted to measure the strain on the cable, that lever being, in the opinion of the engineer of Lloyd's Register, as indorsed by the Committee, "the only instrument not disturbed in its action by the rebound from any sudden withdrawal of the strain."

*See No. 3 in this Return.

In forwarding this communication I am* also to enclose a copy of a report on this machine received from Mr. Galloway, and to state that the Board of Trade will be glad to receive any observations that the Committee of Lloyd's Register, or their engineer, may wish to make.

*See Enclosure in No. 4 in this Return.

I am, &c.

(signed) *T. H. Farrer.*

— No. 6. —

(W. 2831.)

The Secretary of Lloyd's Register to the Secretary of the Board of Trade.

Sir,

2, White Lion Court, Cornhill, E.C.

9 June 1866.

I BEG to acknowledge the receipt of your letter of the 7th instant, with its enclosures, relating to the machine of the Glasgow Anchor and Chain Cable Testing Company (Limited); and, referring to your observation, that it appears that "the Committee of Lloyd's Register have refused to grant an unconditional license for the machine," I lose no time in acquainting you that there must be some misapprehension on this point.

On the 9th March last, I wrote, by the Committee's command, to Mr. Muirhead, the Secretary of the Glasgow Chain Testing Company, acquainting him, in answer to some inquiries on the subject, that the Committee were "willing to leave the responsibility as to the efficiency of the machine to rest on the report of Mr. Galloway, the Board of Trade Inspector."

This decision I confirmed in a subsequent letter to Mr. Muirhead, dated the 25th April, and it has not since been reversed.

On or about the 8th May the Committee received from their engineer, Mr. T. M. Gladstone, the report on the machine in question, of which a copy accompanies your letter. On the 12th May I forwarded to Mr. Muirhead a copy of Mr. Gladstone's report, adding that I should be glad to be furnished with any remarks he might have to make thereon; and there the matter at present rests, so far as this office is concerned.

The

The difference of opinion which exists between Mr. Gladstone and Mr. Galloway in respect to the machine will now receive the Committee's attention.

I am, &c.
(signed) *Geo. B. Seyfang*, Secretary.

P.S.—It may be right I should add that the Committee have and do recognize the Glasgow machine, by classing ships with the figure 1, on certificates of proof issued from that establishment.

(signed) *G. B. S.*

— No. 7. —

(W. 2831.)

The Secretary of the Board of Trade to the Secretary of the Glasgow Testing Company (Limited.)

Board of Trade, Whitehall,
11 June 1866.

Sir,

WITH reference to my letter of the 8th instant, I am directed by the Board of Trade to enclose a copy of a letter received from the Secretary to Lloyd's Register of British and Foreign Shipping on the subject.*

* See No. 6 in this Return.

I am, &c.
(signed) *T. H. Farrer*.

— No. 8. —

(W. 2881.)

The Secretary of the Glasgow Anchor and Chain Cable Testing Company (Limited) to the Secretary of the Board of Trade.

42, West George-street, Glasgow,
14 June 1866.

Sir,

I AM directed to acknowledge receipt of your letter of 11th June current, and accompanying copy of a letter from the Secretary of Lloyd's Committee, and in relation thereto, I beg respectfully to refer you to the accompanying copy of correspondence as to the inspection of the machine belonging to this Company by the engineer of the Committee of Lloyd's.

I am now aware that it would have been better had I transmitted a copy of the correspondence now sent along with my letter to you of 31st May last, but it did not occur to me, when then writing, that anything further was necessary than the short statement embodied in my letter, explaining my reasons for laying before you the copy of Mr. Gladstone's report.

I have, &c.
(signed) *J. Muirhead*, Secretary.

Enclosure in No. 8.

COPY of CORRESPONDENCE as to inspection of the Testing Machine belonging to the Glasgow Anchor and Chain Cable Testing Company (Limited), by the Engineer of the Committee of Lloyd's, London.

1.—EXTRACT from Letter from the Secretary of the Glasgow Anchor and Chain Cable Testing Company (Limited), to *George B. Seyfang*, Esq., Secretary of Lloyd's.

" 42, West George-street, Glasgow,
6 March 1866.

" Sir,
" * * * * * Our machine will be ready to be passed in the course of a fortnight or so hence, and I should be glad to know whether your inspecting engineer would like to see it before then, or at the same time, as Mr. Galloway will be proving it, or after he has done * * * * *

2.—Mr. *Seyfang's* reply.

“Lloyd's Register of British and Foreign Shipping,
2, White Lion Court, Cornhill, E.C.,
9 March 1866.

“Sir,
“ * * * As regards the inspection of the Glasgow proving machine by the society's engineer, I am to add that unless your directors are desirous that it should be examined by Mr. Gladstone, the Committee are willing to leave the responsibility as to its efficiency to rest on the report of Mr. Galloway, the Board of Trade Inspector.”

Note.—The secretary of the Glasgow Anchor and Chain Cable Testing Company (Limited) was informed, on or about the 19th April 1866, by the superintendent of the Glasgow machine, that he (the superintendent) had been requested, in a letter marked “private,” received by him from Mr. Gladstone, to name to the secretary (though not officially) that before the Glasgow machine could be fully accepted by Lloyd's Committee it must be examined and approved by Mr. Gladstone; Mr. Gladstone requesting this to be done lest the secretary should think it (Mr. Gladstone's inspection) not needful. The secretary, however, informed the superintendent that he could take no notice of such unofficial communications.

Thereafter, with the approval of the directors, the secretary wrote to the superintendent on the 23d May, *vide* letter No. 5, following. This letter was written the day before letter No. 3 was received from Mr. Gladstone.

3.—LETTER from Mr. *Gladstone*, Engineer to Lloyd's Committee, to Mr. *William Taylor*, Superintendent of Testing Works of the Glasgow Anchor and Chain Cable Testing Company (Limited).

“Lloyd's Register of British and Foreign Shipping,
Office, 2, White Lion-court, Cornhill, London, E.C.
Proving House, West India Dock,
New-road, Poplar, E.
23 April 1866.

“Mr. William Taylor,
“It has been intimated to me by our chairman (on my informing the Committee that the testing machine at Glasgow would soon be ready for use) that the same must be inspected by me, and all the needful details examined and reported upon before the same can be duly recognised by Lloyd's Committee.

“As this will be done at the expense of the company, and be needful in order that their work shall be duly recognised, you will intimate the same to their secretary.”

“Yours, &c.

4.—LETTER from *William Taylor* to the Secretary of the Glasgow Anchor and Chain Cable Testing Company (Limited).

“24 April 1866.

“ * * * The enclosed, viz. Letter No. 3, came to me this morning; what am I to do with it?”

5.—LETTER from the Secretary of the Glasgow Anchor and Chain Cable Testing Company to *William Taylor*.

“42, West George-street, Glasgow,
23 April 1866.

“My dear Sir,
“In order that you may understand how the matter as to the inspection of the machine here by Mr. Gladstone, the engineer for the Committee of Lloyd's, stands, I send you (though not officially) an extract from my letter on the subject to Mr. Seyfang, the secretary of Lloyd's Committee, and extract from his letter in reply.

“Mr. Galloway, as you are aware, has passed the machine up to 72 tons, and, of course, it will also be recognised by Lloyd's to that extent.”

6.—LETTER from the Secretary of Lloyd's Committee to the Secretary of the Glasgow Anchor and Chain Cable Testing Company (Limited).

“Lloyd's Register of British and Foreign Shipping,
2, White Lion-court, Cornhill, E.C.
25 April 1866.

“Dear Sir,
“MR. GLADSTONE has placed in my hands your letter of the 23d instant, addressed to Mr. Taylor, in relation to Mr. Gladstone's proposed visit to the Glasgow Chain and Anchor Proving Establishment.

“Mr.

"Mr. Gladstone was in error in representing that the committee has required that he should inspect the Glasgow machine as a necessary condition to their recognition thereof; this point was settled by my letter to you of the 9th ultimo.

"In consequence of certain circumstances which have taken place (and which the accompanying copy of correspondence with the Board of Trade will fully explain) the committee instructed Mr. Gladstone to visit in common with other public machines, that at Glasgow, and that he will take an early opportunity of doing."

7.—LETTER from Mr. Gladstone, Engineer to Lloyd's Committee, to Mr. William Taylor, Superintendent of Testing Works of the Glasgow Anchor and Chain Cable Testing Company (Limited).

"Lloyd's Register of British and Foreign Shipping,
Office, 2, White Lion-court, Cornhill, London, E.C.;
Proving House, West India Dock,
New-road, Poplar, E.,

27 April 1866.

"Dear Sir,

"I DULY received your last letter, and it is arranged that I am to proceed to Glasgow early next week to inspect the "testing machine," our secretary having written to inform Mr. Muirhead to that effect, and explaining my error in taking the direction of the chairman as being the decision of the committee.

"What is the situation of the Proving-house?"

"Yours," &c.

8.—LETTER from the Secretary of Lloyd's to the Secretary of the Glasgow Anchor and Chain Cable Testing Company (Limited).

"Lloyd's Register of British and Foreign Shipping,
2, White Lion-court, Cornhill, E.C.,

12 May 1866.

"Dear Sir,

"REFERRING to my letter of the 25th ultimo, I am instructed to forward to you an extract from a report recently made by Mr. T. M. Gladstone, the society's engineer, on the Glasgow Chain and Anchor Testing Machine; and shall be glad to be furnished with any remarks you may think proper to make thereon.

"I am," &c.

— No. 9. —

(W. 2881.)

The Secretary of the Board of Trade to the Secretary of Lloyd's Register.

Sir,

Board of Trade, Whitehall, 16 June 1866.

WITH reference to former correspondence on the subject of the proving establishment licensed by this Board at Glasgow, I am directed by the Board of Trade to enclose a copy of a further letter, and its enclosure received by this Board.*

* See No. 8, in this Return.

I am, &c.

(signed) W. D. Fane.

— No. 10. —

(W. 2999.)

The Secretary of Lloyd's Register to the Secretary of the Board of Trade.

Lloyd's Register of British and Foreign Shipping,
2, White Lion-court, Cornhill, E.C.,

22 June 1866.

Sir,

I AM directed to acknowledge the receipt of your letter, dated the 16th instant, with enclosures relating to the Glasgow Chain and Anchor Proving Establishment.

The committee have likewise received a report from Mr. T. M. Gladstone, in which he adheres to his opinion, that it is injudicious to prove chain cables by dead weight levers alone.

As, however, the committee have already decided to recognise the machine in question, on the responsibility of the Board of Trade Inspector, as to its efficiency, they have nothing to add to their letter on the subject, dated the 9th instant, addressed to Mr. Farrer, and to which I have the honour to refer you.

I am, &c.

(signed) Geo. B. Seyfang, Secretary.

— No. 11. —

(W. 2999.)

The Secretary of the Board of Trade to the Secretary of the Glasgow Anchor
and Chain Cable Testing Company (Limited).

Sir, Board of Trade, Whitehall, 23 June 1866.

* See Paper No. 10
in this Return.

WITH reference to former correspondence on the subject of the proving establishment at Glasgow, I am directed by the Board of Trade to enclose a further letter* from the secretary of Lloyd's Register of British and Foreign Shipping, from which it appears that, although their consulting engineer, Mr. T. M. Gladstone, thinks it injudicious to test cables by dead weighted levers alone, the committee have decided to recognise the machine fully on the responsibility of the Inspector appointed by this Board.

I am, &c.
(signed) T. H. Farrer.

— No. 12. —

(W. 3062.)

The Secretary of Lloyd's Register to the Secretary of the Board of Trade.

Lloyd's Register of British and Foreign Shipping,
2, White Lion-court, Cornhill, E.C.,

Sir,

28 June 1866.

I DULY received your letter of the 20th instant, stating with reference to the correspondence which has taken place in relation to the report on proving houses, made by Messrs. Bidder, Hawksley, and Clark, which accompanied my letter to you, dated the 15th March last, that looking to the facts and arguments stated in the papers which accompanied your letter, "The Board of Trade are of opinion that they would not be justified in making any alteration in the general rules they have issued on the subject of licenses for testing machines."

And having laid the same before the committee of this society, I am directed to acquaint you that, while they see no reason to alter the opinion they have already expressed on the subject, especially as regards the limitation in the length of cables to be tested, they do not deem it right to prolong the discussion, which has unfortunately arisen between the Board of Trade and themselves.

The committee have now to allude to the printed correspondence issued by their order, and it is with extreme regret that they have to state that they have found that the letters and calculations respecting the machine at Low Walker, have been improperly and unjustifiably altered by Mr. Gladstone, the society's engineer; but, as this gentleman has resigned his appointment, the committee do not feel it necessary to make any further comment on this painful subject, beyond remarking that the statement in Messrs. Bidder, Clark, and Hawksley's report (page 24), that the error in the weights of the Tyne machine, "had been detected by the society's engineer, before it had been observed by the engineer of the Board of Trade, but that the necessary alterations directed by the former had not been carried into effect by the persons in charge," was made by those gentlemen under a misapprehension of the real facts of the case.

The committee find that, although the error in the weights was discovered by the clerk, who checked the calculations received from the makers of the machine on or about the 24th October 1864, the error was never specifically brought by Mr. Gladstone to the notice of the parties interested in the machine.

I am, &c.
(signed) Geo. B. Seyfang, Secretary.

— No. 13. —

(W. 3270.)

The Secretary of Lloyd's Tyne Public Chain and Anchor Testing Company
(Limited) to the Secretary of the Board of Trade.

Proving House, Low Walker,
near Newcastle-on-Tyne, 9 July 1866.

Sir,

I AM instructed by the directors of this company to forward to you a copy of
correspondence with Lloyd's committee.

I am, &c.
(signed) *Frank Carr*, Secretary.

Enclosure 1, in No. 13.

Proving House, Low Walker, near Newcastle-on-Tyne, 16 May 1866.

Sir,

I AM instructed by the directors of this company to forward to you a copy of corre-
spondence with the Board of Trade, which I do herewith, and the directors beg to call the
very particular attention of Lloyd's committee to the statement of Mr. Clarke, engineer
to this company.

Geo. B. Seyfang, Esq.,
Lloyd's Committee, London.

I remain, &c.
(signed) *Frank Carr*, Secretary.

[The enclosure in the above letter was a copy of the letter written by the Secretary of
Lloyd's Tyne Public Chain and Anchor Testing Company (Limited) to the Secretary of
the Board of Trade, on the same date (namely, the 16th May 1866),* together with copies
of the documents enclosed in that communication.]

* See Paper No.
17, in Return
No. 304, page 44.

Enclosure 2, in No. 13.

Lloyd's Register of British and Foreign Shipping,
2, White Lion Court, Cornhill, E.C.,
18 May 1866.

Dear Sir,

I AM in receipt of your letter, dated the 16th instant, with its enclosure, in relation to
the correspondence which has taken place with the Board of Trade respecting the Tyne
chain and anchor proving machines, and beg to assure you that I will not fail to bring the
same under the notice of the committee.

Referring in the meantime to that part of Mr. Clarke's statement in which he alleges
that in an interview which he had with me on or about the 17th November 1865, I asked
him if he had made certain alterations which appeared on the paper containing the calcu-
lations for the machinery at Low Walker, I wish to remark that I apprehend his recol-
lection is deficient in this respect.

I did not ask him whether he had made these corrections, for I always understood
that they had been made by Mr. Gladstone; what I asked him was, that inasmuch as Mr.
Gladstone, in a letter addressed to Mr. Burrell, dated 25th October 1864, expressly pointed
out that "the weights and the levers were in error," how it happened that these errors
were not corrected, but were allowed to remain until re-discovered by Mr. Galloway in
July 1865. And I feel bound to add, that although I endeavoured to explain to Mr.
Clarke how important this inquiry was to Mr. Gladstone's interests, Mr. Clarke's replies
did not enlighten me on this very simple point.

Frank Carr, Esq.,
Lloyd's Tyne Public Proving Company,
Custom House Chambers,
Newcastle-on-Tyne.

I am, &c.
(signed) *Geo. B. Seyfang*, Secretary.

Enclosure 3, in No. 13.

Lloyd's Register of British and Foreign Shipping,
2, White Lion Court, Cornhill, E.C.,
14 May 1866.

Sir,

I TRANSMIT for your information a copy of some correspondence which has taken place
between the committee of this society and the Board of Trade respecting the society's
proving house for chains and anchors, &c.

Frank Carr, Esq.,
Lloyd's Tyne Public Testing Company,
Newcastle-on-Tyne.

I am, &c.
(signed) *Geo. B. Seyfang*, Secretary.

Enclosure 4, in No. 13.

Proving House, Low Walker, near Newcastle-upon-Tyne,
9 June 1866.

Sir,

I AM desired by the directors of this company to acknowledge receipt of your letter of the 18th ultimo, and also of your circular dated the 14th ultimo, enclosing a copy of correspondence between Lloyd's committee and the Board of Trade.

With respect to your remarks on Mr. Clarke's statement, transmitted to you in my letter of the 16th ultimo, the directors being aware that you and Mr. Clarke have met since your letter was written, and have interchanged mutually satisfactory explanations, will only observe, that your letter confirms Mr. Clarke's statement in its material point, namely, that the corrections on the document which was before you at the interview in question were not made by him. Since the receipt of your letter the directors have, however, ascertained that the above-mentioned document, which was enclosed by Mr. Clarke to Mr. Gladstone, in his letter to Mr. Gladstone of 26th October 1864, is not the same as that published in page 51 of the published correspondence, and alleged by Mr. Gladstone (page 50) to have been sent by Mr. Clarke to him in his letter of 26th October 1864. The directors have further ascertained, that the document published in page 51, although endorsed by Mr. Gladstone as having been received and approved by him on 27th October 1864, was, in fact, sent to him in August 1865, and was not sent to him by Mr. Clarke at all, but was sent to him by Mr. Burrell, for the purpose of giving him information as to the error discovered and the correction made by Mr. Galloway in July 1865.

In view of these inaccuracies, and of the inaccuracies in the published correspondence, of which evidence was furnished by the enclosures in my letter to you of the 16th ultimo, the directors respectfully claim that credit be given by Lloyd's committee to Mr. Clarke's formal and explicit denial of the statement that the error pointed out to him by Mr. Galloway in July 1865, had been previously pointed out to him by Mr. Gladstone, an error which the directors take the opportunity of observing was corrected, when pointed out, in the course of a single night.

And inasmuch as Lloyd's committee have sanctioned and published statements to the contrary effect, copies of which are appended, and these statements cast a reproach upon the company and its servants which is entirely undeserved, the directors feel that they may confidently appeal to Lloyd's committee to withdraw their sanction from these statements, and to publish the communications on the subject which they have received from this company.

George B. Seyfang, Esq.,
Lloyd's Committee, London.

I remain, &c.
(signed) *Frank Carr*,
Secretary.

Sub-Enclosure 1.

From Mr. Gladstone's Reply to Mr. Galloway's Report (page 47 of the published Correspondence).

"It will be seen that this error was discovered and pointed out by me so early as the 25th October 1864, and that the neglect of the manufacturer and the engineer of the company caused the serious error to continue, while I had no opportunity nor instruction to repeat my examination."

Sub-Enclosure 2.

From Messrs. Bidder, Hawksley, and Clarke's Report (pages 23 and 24 of the published Correspondence).

"It appears, however, that in the cable machine at Low Walker, a very important error, pointed out by the engineer to the Board of Trade, had been allowed for a considerable time to exist uncorrected.

"It is certain, however, as appears from the correspondence placed before us, that this error had been detected by your engineer before it had been observed by the engineer of the Board of Trade, indeed almost as soon as the machine was erected, but that the necessary alterations directed by your officer had not been carried into effect by the persons in charge."

Enclosure 5, in No. 13.

Lloyd's Register of British and Foreign Shipping,
2, White Lion Court, Cornhill, E.C.,

15 June 1866.

Sir,

I AM directed to acknowledge the receipt of your letter, dated the 9th instant, calling attention to some inaccuracies in the correspondence which has been printed under the directions of the committee, so far as it relates to the Tyne testing machine, and to acquaint you that this painful subject is at present occupying the committee's attention; and I am further to assure you, that whatever may be the result of their investigation, they will be quite ready to do ample justice to the directors and officers of that machine.

I am, &c.

(signed) *Geo. B. Seyfang*, Secretary.

Frank Carr, Esq.,
Tyne Public Chain Testing Machine,
Newcastle.

Enclosure 6, in No. 13.

Lloyd's Register of British and Foreign Shipping,
2, White Lion Court, Cornhill, E.C.,

3 July 1866.

Sir,

REFERRING to your letter of the 9th ultimo, and to mine of the 15th ultimo, in respect to the correspondence relating to proving machines, printed by order of this committee, so far as it relates to the machine at Low Walker, I am directed to acquaint you that the committee have given the subject a most careful and deliberate consideration, and find that the letters and calculations regarding that machine have been improperly and unjustifiably altered by Mr. Gladstone; and that the statement in the report of Messrs. Bidder, Hawksley, and Clark, p. 24, to the effect that the error in the weights of the Tyne machine "had been detected by the society's engineer before it had been observed by the engineer of the Board of Trade, but that the necessary alterations directed by the former had not been carried into effect by the persons in charge," was made by those gentlemen under a misapprehension of the real facts of the case.

The committee find that although the error in the weights was discovered by the clerk who checked the calculations, received by Mr. Gladstone from Mr. Clarke on or about the 24th October 1864, the error was never specifically brought by Mr. Gladstone under the notice of the parties interested in the machine.

As Mr. Gladstone has resigned his appointment of engineer to this society, the committee do not feel it necessary to make any further comment on this painful subject; but I am to add that a communication to the same effect as the above has been made to the authorities at the Board of Trade; and it is of course within the province of the directors of the Tyne machine to make such further use of this letter as may appear to them desirable.

I am, &c.

Frank Carr, Esq., Newcastle-on-Tyne. (signed) *Geo. B. Seyfang*, Secretary.

Enclosure 7, in No. 13.

Lloyd's Tyne Public Chain and Anchor Testing Company (Limited),
Low Walker, near Newcastle-upon-Tyne,

9 July 1866.

Sir,

I HAVE laid your letter of the 3d instant before the directors of this company, and am instructed by them to desire you to express to Lloyd's committee their entire satisfaction with its contents.

I am, &c.

(signed) *Frank Carr*, Secretary.

Geo. B. Seyfang, Esq.,
Lloyd's Committee, London.

— No. 14. —

(W. 2841.)

Messrs. *Brown, Lenox & Co.*, to the Secretary of the Board of Trade.Chain Cable and Anchor Works,
Millwall, Poplar, London,
8 June 1866.

Sir,

WE have the honour to acknowledge the receipt of the renewed license of our testing machine, No. 1, and at the same time take the liberty of offering for your information a statement of work done upon this machine during the year of license passed.

You will observe we have tested for our private business no less than 1,822 tons of cables, &c., and anchors, under certificates; and during the early days of the license 106 tons for the public.

The machine, for the satisfaction of your engineer, was taken to pieces, and the wear upon the knife edges and bearings was found to be much less than expected; they were sharpened and rehardened, and the machine is at work again, as perfect as at first.

We have been compelled during the year to send to Lloyd's Register's Committee Machine (publicly acknowledged to be inferior to our own) no less than 170 tons of cables, &c., for which we have had to pay them 168 *l.* 4*s.* 8*d.*, in addition to your license charge of 50*l.* In this quantity *one* shackle and *one* link have been rightly found defective after proof, and *one* link has been most disgracefully cut out and hammered, to discover the effect of a small red short crack, which a hammer would have closed without danger; these trifles would have been discovered in our own machine, but for their arbitrary conduct towards us in steadfastly resisting our certificates in the face of your license, and in opposition to the Act of Parliament.

We have pointed out our right to have our certificates accredited by that committee in a voluminous correspondence, and their only excuse is, "that if we pass your certificates, we must pass certificates of less creditable makers;" an excuse both unjust and absurd, for, by it, they impugn the honour and ability of your engineer of granting licenses to proper persons; and how a committee of gentlemen elected to secure the interests of the body of underwriters they represent, and to protect them against insurance upon ships badly built or badly found, can have been brought to such a conclusion, we cannot tell: and that against a firm, whose endeavours are well known to be used only to furnish the best manufacture, who, for years, were the only makers that proved their work at all, and which was especially marked in Lloyd's book, and whose certificates are admitted by every marine department of this country, and by every foreign Government or shipping society abroad.

We now notice the report of the eminent engineers made to the chairman and Committee of Lloyd's Register; and we can only conclude that the matter has not come within the scope of their practical experience, as it is essential that in a great many instances the strength of the material tested in these machines should be ascertained to the greatest accuracy.

Our experience is from 1816, and all our machines are constructed with full lever power, and we know of no failure. The most scientific men have experimented upon them to their satisfaction, without question or complaint.

From 1816 to 1831 the two machines upon which all the Government cables were tested were one (ours) of full lever power, by "Rennie"; and one (Brunton & Co.) hydraulic power, indicated by guage upon the cylinder, by Bramah. The Navy Board required 20 per cent. more power to be applied upon the hydraulic than upon ours.

The machines in the Royal dockyards were originally indicated by guage upon the hydraulic cylinder, but were subsequently altered to full lever power.

We placed an Armstrong indicator to our No. 1 machine, to satisfy your engineer. Upon every rupture in the machine, this indicator is more or less disturbed, and must be again adjusted before any dependance can be placed upon it, and upon all occasions it differs, above or below the strain, exhibited by the levers, so that it is almost discarded.

We protest most earnestly against the conduct of the Committee of Lloyd's, who

who have constituted themselves a society for making money by setting up machines for proving chains and anchors, and who by rejecting other licensed certificates, have compelled shipowners and captains to take cables and anchors to their machine against their interest, inclination, and frequently at great loss of time.

We protest against this proceeding, both on private and public grounds; privately, because it deteriorates the value of your license, and interferes with our legitimate business; and, publicly, because it compels shipowners to take cables and anchors of inferior make, that have stood the test upon their and other machines licensed by themselves, depending entirely upon such certificates.

To a very large extent heavy loss has been inflicted upon us, where the shipowner would have entrusted his orders to us, depending upon our certificate and upon our reputation and character; in point of fact, this "Resolution" has thrown the whole work of testing for the port of London upon their own machine; and in instances, where we have sent cables to be tested, vessels have been detained in consequence.

We have another licensed machine at our works near Cardiff in Wales, and which by this "Resolution" is rendered nearly useless to the public at the port of Cardiff, where there is no licensed machine to this hour but ours.

When time could be allowed, we have sent cables and anchors back from here to Cardiff, after obtaining the certificates of their proof, the owners preferring our make to others.

The trade of Cardiff, therefore, has been much inconvenienced, and has been supplied with cables and anchors, frequently not tested at all; and rather than wait the arrival of ours from London, have taken such as they could get under certificates from machines licensed by Lloyd's Committee.

We regret the length of this letter, but thinking it right to give you full information, we have been unable to reduce it to our satisfaction.

We have, &c.
(signed) *Brown, Lenox & Co.*

Enclosure in No. 14.

Chain Cable and Anchor Works, Millwall, Poplar.
London, 8 June 1866.

ABSTRACT of WORK done on *Brown, Lenox & Co.'s* Testing Machine at Millwall, License No. 1, from 25th May 1865 to 15th May 1866.

Brown, Lennox & Co.'s Make:					Tons. cwt. qrs. lbs.	Tons. cwt. qrs. lbs.
New stud link chain	-	-	-	-	1,189 4 0 25	
New chain without studs	-	-	-	-	301 13 1 15	
Mooring swivels, shackles, &c.	-	-	-	-	48 5 2 10	
Anchors	-	-	-	-	283 4 0 13	1,822 7 1 7
For the Public, up to November 1865:						
Old stud link chain	-	-	-	-	91 7 3 10	
Old chain without studs	-	-	-	-	4 3 0 14	
Anchors	-	-	-	-	10 15 2 2	
Miscellaneous work						106 6 1 26 3 17 2 13
Tons					- - -	1,932 11 1 18

WORK Tested at Lloyd's Proving Machine for *Brown, Lenox & Co.*, from 24 May 1865 to 31 May 1866.

	Tons. cwt. qrs. lbs.	Cost.
Cables and anchors	- - - 170 16 0 18	£. 166 4s. 8d.

Results,—

1. $1\frac{1}{16}$ anchor shackle cracked.
1. $1\frac{9}{16}$ link found defective after proof.
1. $1\frac{1}{8}$ link found defective after proof.

NEW STUD LINK CHAIN.

Size.	Number of Fathoms.	Weighing about	REMARKS.	Size.	Number of Fathoms.	Weighing about.	REMARKS.
Inches.		Tons. cwt. qrs. lbs.		Inches		Tons. cwt. qrs. lbs.	
$\frac{1}{2}$	290	1 16 0 9		$1\frac{1}{2}$	1,487	88 1 1 28	1 Link broke.
$\frac{9}{16}$	60	0 9 1 20		$1\frac{9}{16}$	300	18 0 2 18	
$\frac{3}{8}$	181	1 14 1 5		$1\frac{5}{8}$	1,750	119 3 3 7	
$\frac{3}{4}$	1,015	14 10 3 17		$1\frac{11}{16}$	210	14 15 1 10	
$1\frac{1}{8}$	90	1 7 1 1		$1\frac{3}{4}$	999	76 4 1 19	1 Joining shackle broke.
$\frac{7}{8}$	787	15 7 1 25	1 Link broke.	$1\frac{7}{8}$	345	27 8 3 11	
$1\frac{5}{8}$	790	17 5 1 16		$1\frac{7}{8}$	300	26 3 0 3	
1	535	13 19 3 26		2	1,171	117 17 3 4	4 Links broke.
$1\frac{1}{16}$	295	8 6 3 18		$2\frac{1}{8}$	15	1 12 3 14	
$1\frac{1}{8}$	1,532	48 19 3 3		$2\frac{3}{16}$	375	38 10 2 19	
$1\frac{3}{8}$	345	11 13 0 14		$2\frac{1}{4}$	650	82 18 3 12	1 End link, and 1 other broke.
$1\frac{1}{2}$	1,730	67 11 2 22		$2\frac{1}{2}$	1,352	193 3 3 10	8 Shackles and 3 links broke.
$1\frac{5}{8}$	530	21 13 3 8		3	420	92 18 3 21	
$1\frac{3}{4}$	1,437	67 8 1 26					
$1\frac{7}{8}$	100	4 19 0 8	1 anchor shackle broke.				
				Tons	-	1,189 4 0 25	

NEW CHAIN without STUD.

Size.	Number of Fathoms.	Weighing about	Size.	Number of Fathoms.	Weighing about
Inches.		Tons. cwt. qrs. lbs.	Inches.		Tons. cwt. qrs. lbs.
$\frac{1}{2}$	625	1 0 3 4	1	367	10 10 3 24
$\frac{5}{8}$	166	0 8 3 18	$1\frac{1}{8}$	181	5 18 2 9
$\frac{3}{4}$	582	2 2 3 3	$1\frac{3}{8}$	36	1 9 3 4
$\frac{7}{8}$	166	0 13 1 19	$1\frac{1}{4}$	229	10 17 0 9
$\frac{1}{2}$	1,266	7 14 0 12	$1\frac{5}{8}$	34	1 16 0 20
$\frac{9}{16}$	142	1 4 1 4	$1\frac{3}{4}$	1	0 1 1 14
$\frac{5}{8}$	999	11 6 2 13	$1\frac{1}{2}$	2,895	153 3 3 1
$1\frac{1}{16}$	462	5 14 0 9	$1\frac{3}{4}$	240	17 12 3 14
$\frac{3}{4}$	461	7 18 3 18	2	257	24 13 1 3
$1\frac{1}{8}$	66	1 2 1 19	$2\frac{1}{4}$	98	17 1 1 22
$\frac{7}{8}$	736	18 1 2 18			
$1\frac{1}{4}$	4	1 0 0 10			
			Tons	-	301 13 1 15
			New Swivels and Shackles	- -	48 5 2 10

OLD STUD LINK CHAIN Tested for the Public.

Size.	Number of Fathoms.	Weighing about	REMARKS.	Size.	Number of Fathoms.	Weighing about	REMARKS.
Inches.		Tons. cwt. qrs. lbs.		Inches.		Tons. cwt. qrs. lbs.	
$\frac{3}{4}$	92	1 5 3 7	All stood.	$1\frac{1}{2}$	298	16 9 3 0	192 fathoms condemned.
$1\frac{1}{8}$	140	3 1 0 0	All stood.	$1\frac{5}{8}$	45	2 19 0 0	All stood.
1	350	12 2 3 0	135 fathoms condemned.	$1\frac{1}{2}$	15	1 0 2 0	All stood.
$1\frac{1}{8}$	214	6 14 1 0	105 fathoms condemned.	$1\frac{3}{4}$	225	14 9 3 0	All stood.
$1\frac{1}{4}$	68	2 7 0 3	45 fathoms condemned.	2	300	21 13 0 0	105 fathoms condemned.
$1\frac{3}{8}$	205	9 5 0 0	190 fathoms condemned.		Tons -	91 7 3 10	

OLD CHAIN without STUD Tested as above.

Size.	Number of Fathoms.	Weighing about	REMARKS.	Size.	Number of Fathoms.	Weighing about	REMARKS.
Inches.		Tons. cwt. qrs. lbs.		Inches.		Tons. cwt. qrs. lbs.	
$\frac{3}{8}$	16	0 1 0 27	All stood.	$\frac{7}{8}$	25	0 10 1 9	All stood.
$\frac{5}{16}$	17	0 0 3 26	Ditto.	1	7	0 3 2 0	Ditto.
$\frac{1}{2}$	20	0 1 3 18	Ditto.	$1\frac{1}{8}$	13	0 16 0 0	Ditto.
$\frac{5}{8}$	32	0 6 3 4	Ditto.	$1\frac{5}{8}$	30	1 18 3 0	Ditto.
$1\frac{1}{8}$	$7\frac{1}{2}$	0 1 3 7	Ditto.		Tons -	4 3 0 14	
$\frac{3}{4}$	7	0 1 3 7	Ditto.				

NEW ANCHORS.

				Weighing about					Weighing about
				Tons. cwt. qrs. lbs.					Tons. cwt. qrs. lbs.
1—10	-	-	-	32 2 0 7	60—70	-	-	-	72 9 1 2
10—20	-	-	-	57 0 0 14	70—80	-	-	-	17 14 1 5
20—30	-	-	-	26 1 1 19	Trotman's	-	-	-	16 13 2 22
30—40	-	-	-	24 5 3 8	Porter's	-	-	-	21 10 0 8
40—50	-	-	-	8 3 1 5	Rogers'	-	-	-	4 11 1 13
50—60	-	-	-	2 12 2 22					
									283 4 0 13
					Old Anchors	-	-	-	10 16 2 2
					Tested for the Public—Tons	-	-	-	293 19 2 15

					Tons. cwt. qrs. lbs.			
Brown, Lenox, & Co.'s make—New stud link chain - - - -					1,189	4	0	25
New mooring swivels and shackles -					48	5	2	10
New chain without stud - - - -					301	13	1	15
Anchors - - - - -					283	4	0	13
					1,822	7	1	7
For the Public—Old stud link - - - - -					91	7	3	10
„ without stud - - - - -					4	3	0	14
„ anchors - - - - -					10	15	2	2
					1,928	13	3	5
Miscellaneous work - - - - -					3	17	2	13
Tons - - -					1,932	11	1	18

— No. 15. —

(W. 2841.)

The Secretary of the Board of Trade to the Secretary of Lloyd's Register.

Sir,

Board of Trade, Whitehall, 12 June 1866.

I AM directed by the Board of Trade to enclose, for the information and consideration of the committee of Lloyd's Register of British and Foreign Shipping, a copy of a letter received from Messrs. Brown, Lenox & Co.*

*See Paper No. 14
in this Return.

I am, &c.,
(signed) T. H. Farrer.

— No. 16. —

(W. 2934.)

The Secretary of Lloyd's Register to the Secretary of the Board of Trade.

Lloyd's Register of British and Foreign Shipping,
2, White Lion Court, Cornhill, E.C.,

Sir,

18 June 1866.

I AM directed to acknowledge the receipt of your letter, dated the 12th instant, transmitting copy of one dated 8th June, from Messrs. Brown, Lenox & Co., reflecting on the committee's proceedings in relation to their resolution not to class ships with the figure "1" in the Register Book, unless the anchors and chains have been satisfactorily tested at a *public* machine.

In arriving at that resolution the committee were actuated solely by a sense of what was due to the public in securing that a proper proof and examination of these articles should take place, which, they submit, it is impossible to ensure if the certificates of the manufacturers that they have tested their own work, are to be deemed sufficient; and in this view the committee feel that it is their duty to adhere to their present requirements; and can only hope that the time may yet arrive when the Government will entertain a similar opinion on this very important point.

As regards Messrs. Brown, Lenox, & Co., the committee have never impugned, and have never intended to impugn either the respectability of their firm or the efficiency of their machine; but it must be clear that it is impossible for the committee to make an exception in favour of any manufacturer or manufacturers, however high their character may be, while to accept generally the certificates of all chain and anchor makers as to the proving of chains and anchors manufactured by themselves, would virtually be returning to the unsatisfactory state of affairs which in this respect existed prior to the committee taking any steps in the matter, and to the passing of the present Chain and Anchor Testing Bill.

I am, &c.
(signed) Geo. B. Seyfang, Secretary.

CHAIN CABLES AND ANCHORS.

**COPY of further CORRESPONDENCE and REPORTS
relative to CHAIN CABLES and ANCHORS (in con-
tinuation of Parliamentary Papers, Nos. 111
and 304, of Session 1866).**

(Mr. Laird.)

***Ordered, by The House of Commons, to be Printed,
18 July 1866.***

425.

Under 2 oz.

DEVIATION OF COMPASSES.

RETURN to an Order of the Honourable The House of Commons,
dated 6 March 1866;—for,

COPY “ of CORRESPONDENCE between the Royal Society, the Board of Trade,
the Admiralty, and the Committee of Lloyd’s Register, with respect to
the DEVIATION of COMPASSES.”

Board of Trade, }
14 March 1866. }

T. H. FARRER,
Joint Secretary.

— No. 1. —

Royal Society to the President of the Board of Trade.

Sir,

The Royal Society, Burlington House,
25 May 1865.

THE attention of the Fellows of the Royal Society has been recently directed to the very great increase which has taken place in the employment of iron in the construction and equipment of ships, and the consequent augmentation of the embarrassments occasioned in their navigation by the action of the ship’s magnetism on their compasses.

The inconveniences which have already made themselves felt in the ships of the Mercantile Marine, and which threaten to be productive of very serious loss of life and property, unless remedial measures be adopted similar to those which have proved so advantageous to the ships of Her Majesty’s Navy, have induced the President and Council of the Royal Society, after much consideration, to venture on the step of calling your attention, as presiding over the Department of Trade, to a subject which they believe to be of pressing importance.

In this view, the accompanying memorandum has been prepared, stating, as briefly as may be, the particulars which they are desirous of bringing under your consideration, in the belief that the time has fully arrived when measures of a more stringent and effectual character are required in the direction which has been already taken by Her Majesty’s Government in such legislative enactments as those contained in the “ Merchant Shipping Act, 1854,” adverted to in the accompanying memorandum.

I have only to add, that it would afford the President and Council great satisfaction if they could be of any further assistance in a matter which they believe to be of so much importance.

I have, &c.
(signed) *Edward Sabine*,
President of the Royal Society.

Enclosure in No. 1.

MEMORANDUM.

It is believed that the time has come when it is expedient that the Executive Government should exercise a more direct and systematic supervision over the adjustment of the compasses of ships of the Mercantile Marine than it has hitherto done. The opinion that it might do so with advantage is not new, as may be seen from passages in the Second and Third Reports of the Liverpool Compass Committee (Second Report, p. 30; Third Report, p. 38), but it has of late years been gaining strength from the following, among other circumstances:—

1. The great increase in the number of iron ships, as well as in the amount of iron used in the construction of such ships.
2. The losses of iron ships.
3. The advances which have been made in, and the present state of the science of the deviation of the compass.

We may consider these separately.

1. It is believed that for some years, the number of iron ships constructed has greatly exceeded that of wood-built ships; and this is particularly the case as regards passenger steamers.

In such vessels iron is now used, not only in the construction of the hull, but in decks, deckhouses, masts, rigging, and many other parts of the ship for which wood was till recently used.

The consequence has been a great increase in the amount of the deviation of the compass, increased difficulty in finding a proper place for the compass, and increased necessity for and difficulty in applying to the deviation either mechanical or tabular corrections.

2. Many recent losses of iron steamers have taken place, in which it is probable that compass error has occasioned the loss. In most of these, however, from the want of any record of the magnetic state of the ship, of the amount of original deviation, and of the mode of correction, and from the investigation into the causes of the loss being conducted by persons not instructed in the science, and who are necessarily incompetent either to elicit the facts from which a judgment can be formed, or to form a judgment on those facts which are elicited, no certain conclusion as to the cause of loss can be arrived at. The investigations are, however, sufficient to show the want of a better and more uniform system of compass correction in the mercantile marine, and of more knowledge of the subject among masters and mates.

3. Since the first introduction of iron ships, it has been a recognised fact, that they cannot be safely navigated without the compass being, as it is termed, "adjusted," i. e., without the deviations being corrected either mechanically by magnets or by a table of errors; but, at first, the correction of each ship was a separate and independent problem. Now the case is different. The theory of the deviation, its causes, and its laws, are now thoroughly understood, and reduced to simple formulæ, leaving the numerical magnitude of a certain small number of quantities to be determined by observation for each ship separately; and further, by recording, reducing, and discussing the deviations which have been observed in the ships of the Royal Navy of different classes, numerical results as to the values of these quantities in ships of each class have been obtained, which promise to be of the greatest use in facilitating the complete determination of the deviation and its correction, in suggesting modes for constructing iron ships, and in the selection of the position of the stand compass. The science of magnetism, in relation to navigation, is in fact in a position, in some degree analogous to that in which the science of astronomy at one time was. The principles of the science have been established, the formulæ have been obtained, but numerical values are wanted, which can only be derived from a large number of observations systematically made and discussed. At present, these numerical results have only been obtained from, and are only applicable to, the ships of the Royal Navy. Without some systematic direction, the mercantile marine can neither derive the full benefit of, or contribute its due share to the advance of the science. That the subject is one coming properly within the cognizance of the Board of Trade, may be inferred from the Legislature having already in the "Merchant Shipping Act, 1854," sec. 301, Art. (2), provided that "every sea-going steam-ship employed to carry passengers, shall have her compasses properly *adjusted* from time to time, such adjustment to be made to the satisfaction of the shipwright surveyor, and according to such regulations as may be issued by the Board of Trade."

The shipwright surveyor is then (section 309) to make a "declaration" that the "compasses are such, and in such condition as required by the Act," and on such "declaration" the "certificate" of the Board of Trade is issued.

It does not appear how these enactments are construed or carried into effect. It is not, however, understood that the shipwright surveyor is expected, or is necessarily competent to do more than see that the ship is furnished with proper compasses, but the goodness of the compass

compass has nothing to do with the deviation, the best compasses are affected by the deviation precisely in the same way and to the same extent as the worst.* It is not understood that he exercises any judgment or control as to the position of the compass, the amount of deviation or the mode of adjustment or any of the various points which are involved in the compass being "properly adjusted."

As regards the important subject of "deviation," all that has been done by the Board of Trade consists, it is believed, in the publication of the "Circular on Deviation" compiled by Admiral FitzRoy, the publication of the reports of the Liverpool Compass Committee, and the publication of "practical information for masters and mates," by Mr. Towson.

As regards the particular points to which the attention of the Board of Trade may be invited, they may be considered under the following heads:—

1. The correction of the compass in particular ships.
2. The advancement of the science of the deviation of the compass.
3. The education of masters and mates.

1. As before observed, it is now recognised that every iron ship must have its compasses "adjusted." Hitherto, two totally different modes of adjustment have been practised, each of which has its advantages and disadvantages.

The system recommended by a committee of men of science, and naval officers appointed by the Admiralty in 1837, and which has been uniformly followed in the Royal Navy from that time. In this system each ship has a "standard compass" distinct from the steering compass, fixed in a position selected not for the convenience of the steersman, but for the moderate and uniform amount of the deviation at and around it. The ship is navigated solely by that compass, the deviation of that compass on each course is ascertained by the "process of swinging" the ship, a table of deviations is formed, and the deviations given by the tables are applied as corrections to the courses steered.

2. The system proposed by the Astronomer Royal in 1839, and which is understood to be generally followed in the mercantile marine. In this system the deviations of the compass are compensated by magnets (and occasionally soft iron). The ship is navigated by the compass so corrected, generally the steering compass, and generally without any tabular correction.

It would not be right considering the weight of authority on each side to pronounce any decided opinion against either of these modes of correction when properly used. The first system has proved in the Royal Navy to be one which can be used without danger; the same cannot be said of the second method as regards the Mercantile Marine, but the principal danger of the method arises from what is in truth an abuse of the method: it is that, in reliance on the power of correcting any amount of original deviation, however great, the navigating compass is placed in a position in which the original deviations are excessive and vary rapidly, and in which no navigating compass should be placed.

In merchant ships the most convenient place for the steering compass is generally near the upper part of the stern-post, the rudder-head, the tiller and the iron spindle of the steering-wheel, all from their shape and position powerfully magnetic. The constructor and owner, for the sake of economy, desire that the steering compass should be the navigating compass. The compass adjuster fears that any objection on his part would be considered a confession of incompetence, and that some less scrupulous adjuster would not hesitate to undertake the correction. The correction can only be made by powerful magnets. The compass is then held, as it were in equilibrium, by powerful antagonistic forces, and when the changes take place, which it is known do take place in all new iron ships, or when any changes take place in the magnets, large errors are introduced which are the more fatal because the ship-master is taught to believe that his compass is correct. This abuse of the method is one, the temptation to which is unfortunately so strong that it is believed it can only be effectually prevented by prohibiting the use of the steering compass as the navigating compass, or rather by requiring that the ship shall have a navigating compass distinct from and in addition to the steering compass.

It is therefore recommended that every iron passenger-ship, should be required to have a standard compass, distinct from the steering compass, in a selected situation, at a certain distance from all masses of iron, that whether corrected or not the original deviations of standard compass should not in ordinary cases exceed a certain limited amount and that, on each occasion of the compass being adjusted, a table of the deviations should be furnished to the master, and returned to the Board of Trade, and that, if corrected by magnets, a return should be made of the position of the magnets and of every subsequent alteration of their position, provision may be made for exceptional cases, in which it may be found impracticable to place the standard compass in a position where the original deviation is within the limit requiring in such cases a special certificate from the central authority.

It may be here observed, as regards many practical matters connected with the adjustment of the compass in particular ships, on which at present great diversity of practice prevails,

* This is subject to the qualification that, from the diminution of directive force in ships having large deviations, compasses of superior power and delicacy are required, and if the compasses are corrected by magnets a particular arrangement of needles is requisite.

prevails, that an organised department, under a skilful superintendent, in constant communication with the ports, would probably be of the greatest service not merely in laying down rules, but in giving advice and suggestions to naval constructors, compass makers, and adjustors, and in producing a uniform system of adjustment at the different ports which would be generally understood by masters. Advice from the same source would be not less useful to the authorities in the different ports in suggesting means of facilitating the adjustment, by meridian marks on shore, laying down moorings, &c. It would, probably, be one of the first duties of the superintendent of such a department to acquaint himself thoroughly with the methods practised at the different ports and to give such suggestions, either in the form of reports to the Board of Trade, or in private communications, or both, as might appear to him to be advisable.

Such a superintendent would also be available as an assessor in investigations into the loss of iron vessels in cases in which there is any possibility of the loss having been occasioned by compass error.

2. The advancement of the science of the deviation of the compass.

Whatever difference of opinion exists as to the advantage or necessity of a standard compass, as regards the safety of particular ships there is none as to its being indispensable for any scientific inquiry into the amount of the deviation and of its constituent parts and its changes. It is from the tables of deviation of such compasses, and such compasses alone, observed at different times and places, and systematically reduced and discussed, that those numerical results can be obtained, which promise to be so useful in securing in iron ships a place for the standard compass, where the deviation is of a safe and manageable amount, and in guarding against the dangers which arise from changes in the magnetism of recently built ships. It is from the recorded deviations of such compass that, on the loss of a ship, a judgment may be formed of the effect of the deviation in causing any error in the course of the ship.

3. The education of masters and mates.

At present it may be said that entire ignorance of the subject is the rule.

The subject has not hitherto been a recognised branch of the education of the seaman, and the most skilful seamen frequently either ignore it altogether or look upon it as a mystery not capable of comprehension.

Now, however, that the principles of the science have been established, it is found that the subject is not one of any serious difficulty, and although it might not be considered just to require masters and mates, already certificated, to pass an examination in a new subject, yet an opportunity might be given them of passing a voluntary examination; and as regards future candidates for a certificate of competence, notice might be given that after a certain period, say two or three years, a certain amount of knowledge of the subject will be required from candidates, and in the meantime a text-book, containing the necessary amount of information, might be prepared and published, and the examiners of the local marine boards might themselves receive instruction, and, if necessary, undergo an examination on the subject.

For the purposes indicated it seems desirable to establish a department of the Board of Trade, under a competent superintendent, the whole or greater part of whose time should be devoted to this subject, almost all the advances which have hitherto been made in the science, and which have placed England at the head of the science, is due to there having been for the last 25 years one officer charged by the Admiralty with this duty almost exclusively. Such an officer becomes the depository of all that is known on the subject, and has no difficulty in obtaining the best scientific assistance.

It seems desirable that, for some years at least, the Board of Trade should take advantage of the ability and experience of the present superintendent of the Compass Department of the Navy. It is understood that there would be no practical difficulty, and there would be many advantages, in the present state of the science, in having the superintendence of the compasses of the Royal and Mercantile Marine united in one head, with competent assistants in the two branches of the service.

The subject, as has been observed, is not one of difficulty. Any intelligent man could speedily be instructed in all that would be necessary to enable him to discharge the duties of assistant for the Mercantile Marine; and in the selection of such an assistant probably it would be more important to look to general ability, intelligence, docility, and the habit and aptitude for dealing with men, and particularly with masters of merchant vessels, than to any previous knowledge of the subject.

— No. 2. —

(W. 2085)

The Board of Trade to the President of the Royal Society.

Sir,

Board of Trade, 25 July 1865.

I AM directed by the Lords of the Committee of Privy Council for Trade to acknowledge the receipt of your letter of the 25th May, and its enclosed memorandum, calling attention to the subject of the adjustment of compasses in iron vessels.

The

The memorandum states that the subject of the deviation of compasses is one which has hitherto been regarded as too intricate and obscure to be made the subject of practical rules for seafaring men, but that recent experience has placed the science on a sound basis, and has made it possible to frame rules which there will be no practical difficulty in applying.

The memorandum further intimates what those rules should be with respect to the placing and adjustment of compasses, and suggest that measures should be taken by the Board of Trade to enforce their observance; it also suggests that steps should be taken to compel merchant officers to become acquainted with them, and finally recommends that, for the accomplishment of these purposes, an officer should be appointed, whose duty it should be, in communication with the Compass Department of the Admiralty, to aid the Board of Trade in carrying it into effect.

The Board of Trade desire me, in reply, to return their thanks to the Royal Society for calling attention to a subject which is of first rate importance to the Mercantile Marine. They have no doubt that the present practice is far from satisfactory, nor do they think that the steps taken by the Board of Trade, under the provisions of existing Acts, are such as to remedy the evil. At the same time they see considerable difficulty in adopting all the suggestions made by the Royal Society.

The steps which the Board of Trade now take are as follows :—

The Merchant Shipping Act provides that the compasses of passenger steamers shall be adjusted to the satisfaction of the Board of Trade surveyors, and according to regulations laid down by the Board of Trade. This duty the surveyors do as well as the means at their disposal enable them to do, and according to regulations which will be found in paragraphs 83 to 86 of the accompanying "Instructions to Surveyors."

As regards the information of masters and mates, the Board of Trade have circulated a pamphlet, prepared by Mr. Towson, of Liverpool, which is, no doubt, known to the Royal Society, and have added a general question on the subject to the examination papers.

Under these circumstances, it is to be considered whether the Board of Trade can, and whether, if they can, they ought to do more than they do, either as regards the proper supply and adjustment of compasses, or as regards the diffusion of information on the subject.

As regards the first of these points, viz., the proper supply and adjustment of compasses, the Royal Society will, no doubt, concur with the Board of Trade in thinking that it is very undesirable for the Legislature or the Government, except under very exceptional circumstances, to take upon themselves responsibilities which properly belong to shipowners and insurers, or to dictate to those persons the mode in which they shall carry on their business. The proper supply and adjustment of compasses is a matter so material to the safety and success of these undertakings that motives of self-interest are likely to effect much greater and much better results than could be hoped for from the compulsory interference of a Government Department.

These considerations will have to be very carefully weighed before any attempt is made to obtain from the Legislature further powers for the regulation of compasses in merchant ships. And, under the law as it now stands, the Board of Trade do not see what effectual step they can take in the direction pointed out by the Royal Society.

In the first place, the powers under which they act only apply to passenger steamers, whilst the want which the Royal Society wish to meet is felt just as much in the case of other iron vessels, which are becoming more numerous every day.

In the second place, the powers of the Board of Trade only extend to obtaining a certificate "that the compasses have been properly adjusted." They do not enable the Board of Trade or its officers to see that the compasses are good, or to require what the Royal Society appear to consider the most important condition of all, that there should be a standard compass (in addition to the steering compass) so placed as to be free from local attraction.

This Board cannot, therefore, do what is wanted under the present Acts.

There is, however, a body, namely, Lloyd's Register Committee, whose proper business it is to see that ships classed by them are seaworthy, and my Lords will

refer this part of the subject to them, stating what they hear upon the subject from the Royal Society.

This Board will, also, gladly communicate to Lloyd's any practical rules which the Royal Society can furnish as to the supply, placing, and adjustment of compasses, and as to the effect upon them of different modes of construction of the build of the ship.

Secondly. As regards the diffusion of information on the subject of compasses, especially among merchant officers, the first desideratum appears to be a clear and intelligible manual, or set of directions, upon the subject, containing such practical rules as the present state of science can furnish, and such a statement of the principles as may be necessary for the comprehension of those rules. My Lords will be glad to be informed by the Royal Society if they can put them in the way of obtaining such a manual. Any expense connected with its preparation will be readily defrayed by the Board of Trade.

The next step to be taken would be to introduce the subject into places of nautical education. On this the Board of Trade can do nothing except communicate with the Science and Art Department, which they will gladly do, on learning from the Royal Society that such a manual as above-mentioned is in preparation.

The third step would be to introduce the subject more effectually into examinations in navigation, and to have printed questions prepared for the purpose. On this point, also, the Board of Trade would be glad to know whether the Royal Society can give them information or assistance. One difficulty which will arise will be the difficulty in finding examiners who have given sufficient attention to the subject, and the first step must probably be to instruct the examiners themselves. For this purpose, also, the suggested manual will be of great importance.

The steps suggested above may be taken with the aid of the Royal Society, without any such appointment by the Board of Trade of an additional officer as the Royal Society suggest.

This disposes of most of the important points referred to. There are two which still require notice. The Royal Society propose that the suggested new officer of the Board of Trade shall assist at inquiries into wrecks where questions arise concerning the deviation of the compass. Though the Board of Trade are not prepared to appoint a special officer for this purpose, or to commit the inquiry to such an officer, they think that it would be very useful if, in the case of future inquiries into wrecks, where important questions concerning compasses are likely to be raised, a person thoroughly acquainted with the subject could attend and give the Court the benefit of his opinion. On this subject the Board will communicate with the Admiralty.

Lastly, the Royal Society refer to the possible improvement of the science by means of further observations.

As regards this, all the Board of Trade could do would be to obtain observations from masters of merchant ships in the manner originally proposed by the Royal Society when the Meteorological Department of this office was established. The whole subject of that department is now under consideration, and this branch of the subject of the Royal Society's letter will be considered in connection with the rest of that department.

I have, &c.
(signed) *T. H. Farrer.*

Enclosure in No. 2.

INSTRUCTIONS to Board of Trade Surveyors, Paragraphs 83 to 86.

COMPASSES.

Certificate of adjustment required; s. 301.

83. A CERTIFICATE to the effect that the compasses of sea-going passenger steamers have been examined and adjusted by competent persons is to be required of the master or owner, and is to be carefully examined by the shipwright surveyor, who is to satisfy himself as to the proficiency of the person whose signature is attached to the certificate, more especially in iron steam-vessels; and either the certificate, or a copy of it with the name of the party giving the certificate, is to be sent with the declaration to the Board of Trade.

84. It

84. It is very important, especially in foreign-going passenger steam-ships, that the standard compass *should not be adjusted by any magnets*, but that it should have its errors ascertained, and applied when required. This compass should always stand in the same place precisely when it is used as it did when its errors were observed.

Foreign-going steam-ships should not have their compasses adjusted by magnets.

85. Annexed is a form which has been prepared with care, and may be used with advantage by the persons who give the certificates, especially in the case of iron steamers. These forms, when used, are to be properly filled up, signed, and forwarded to the Board of Trade. In all cases in which any iron or magnets have been used to adjust the compass, a statement to that effect is to be made on the declaration.

When magnets are used, the fact should be noted.

86. Form to be filled up by the person employed to determine the deviation of the compasses on board an iron steamer, when it can be done.

Bearing of a distant object by the Compass }
to be used on shore - - - - - }

Bearing of the same object by the Standard }
Compass on shore - - - - - }

Difference A.

Ship's Head by the Standard.	Bearing of the Shore Compass from the Standard Compass.	Bearing of the Standard Compass from the Compass on Shore.		Deviation of the Standard Compass.
		Observed.	Corrected for the Difference of the Compasses A.	
North - - - -				
N. by E. - - - -				
N. N. E. - - - -				
N. E. by N. - - - -				
N. E. - - - -				
N. E. by E. - - - -				
E. N. E. - - - -				
E. by N. - - - -				
East - - - -				
E. by S. - - - -				
E. S. E. - - - -				
S. E. by E. - - - -				
S. E. - - - -				
S. E. by S. - - - -				
S. S. E. - - - -				
S. by E. - - - -				
South - - - -				
S. by W. - - - -				
S. S. W. - - - -				
S. W. by S. - - - -				
S. W. - - - -				
S. W. by W. - - - -				
W. S. W. - - - -				
W. by S. - - - -				
West - - - -				
W. by N. - - - -				
W. N. W. - - - -				
N. W. by W. - - - -				
N. W. - - - -				
N. W. by N. - - - -				
N. N. W. - - - -				
N. by W. - - - -				

Signed

This form is to be filled up to every second point of the compass, if possible.

— No. 3 —

(W. 2085.)

The Board of Trade to the Chairman of *Lloyd's* Register.

Sir,

Board of Trade, 25 July 1865.

I AM directed by the Lords of the Committee of Privy Council for Trade to enclose, for the consideration of the committee of *Lloyd's* Register, a copy of a letter (with its enclosure) from the Royal Society, relating to the important subject of compasses in iron ships. I also enclose a copy of the reply of the Board of Trade.

From these papers the Committee will see that one of the points, perhaps the most important of them, to which the Royal Society call attention, is the want of proper attention to the supply, the placing, and the adjustment of compasses; and the Committee will further see that the Board of Trade are unable to take any effectual steps in the direction pointed out by the Royal Society.

Under these circumstances, the Board of Trade will be glad to learn whether it is in the power of *Lloyd's* Register Committee to take any steps in the matter.

It is scarcely necessary to say that the Board of Trade will be glad to give the Committee any help in their power on a case which so materially affects the safety and welfare of the Mercantile Marine.

I have, &c.
(signed) *T. H. Farrer.*

— No. 4. —

(W. 2085.)

The Board of Trade to the Admiralty.

Sir,

Board of Trade, 25 July 1865.

I AM directed by the Lords of the Committee of Privy Council for Trade to enclose copy of a letter, with its enclosure, from the Royal Society, on the subject of compasses in iron ships; also a copy of the reply of the Board of Trade.

My Lords will be obliged if the Lords Commissioners will inform them whether they are able, through the Compass Department of the Admiralty, to furnish this Department with any information or suggestions on the subject.

The Board of Trade request especially to be informed whether the Lords Commissioners have taken any, and, if any, what steps towards the examination of officers of Her Majesty's Navy with regard to compasses.

They will also be obliged if the Lords Commissioners will inform them whether, in case of future inquiries into wrecks, where the compasses are said to be in fault, the Admiralty could, on special application from this Board, instruct some officer, who is skilled in the use of compasses, to attend the inquiry, so that he might be able to give the Court which conducts the inquiry his assistance and advice.

I have, &c.
(signed) *T. H. Farrer.*

— No. 5. —

(W. 2085.)

The Secretary of *Lloyd's* Register to the Board of Trade.

Lloyd's Register of British and Foreign Shipping,
2, White Lion-court, Cornhill, E.C.,

4 August 1865.

Sir,

I AM directed to acknowledge the receipt of your letter, dated 25th ultimo, with its enclosures, relating to the variation, &c. of compasses in iron ships, and to acquaint you that it occupied the attention of the committee of this society at their meeting yesterday.

It

It appears that it is a subject encompassed with difficulties, and that but little is known at present as to any method which shall ensure satisfactory action of compasses in iron vessels.

The Committee apprehend, therefore, that it will not be in their power to take any active steps in the matter; but they will avail themselves of such means as are at their disposal to obtain information on the important subject thus brought under their notice, and will apprise the Board of Trade authorities of the result of their inquiries.

I am, &c.
(signed) *Geo. F. Seyfang,*
Secretary.

— No. 6. —

The Board of Trade to the Royal Society.

(W. 3027.)

Sir,

Board of Trade, 12 August 1865.

I AM directed by the Lords of the Committee of Privy Council for Trade to forward to you the enclosed copy of a letter received from the Secretary to Lloyd's Register, in answer to a communication from this Board relative to the subject of compasses in iron ships.

I have, &c.
(signed) *W. D. Fane.*

— No. 7. —

The President of the Royal Society to the Board of Trade.

Sir,

Llandoverly, 28 August 1865.

I BEG to acknowledge the receipt of your letter (W. 3027.) of the 12th instant, enclosing copy of a letter received from the Secretary to Lloyd's Register. They shall be duly laid before the Council of the Royal Society, together with your previous letter, at the first meeting after the recess.

From inquiries which I have made, I have reason to believe that a manual, such as you have referred to, for the instruction and guidance of the builders, fitters, and navigators of the iron ships employed in conveying passengers and merchandise, might, when the proper time shall arrive, be supplied by persons whose sound and practical knowledge qualifies them eminently for rendering such a public service. But a work which shall satisfy all the requirements referred to in your letter of the 25th July cannot be prepared until the system to be adopted in the Mercantile Marine shall have been, to some extent at least, determined; and then only with the concurrence of the person or persons who shall be charged with bringing the system into practical operation. The success which has attended the steps taken by the Board of Admiralty to remedy the evils resulting from the disturbance of the compass in Her Majesty's ships is owing to the combination of a proper code of instruction with arrangements for their enforcement under official and competent superintendence, and may be advantageously referred to as a precedent, should the Board of Trade be disposed to adopt a similar proceeding.

I have, &c.
(signed) *Edward Sabine, P.R.S*

— No. 8. —

The Board of Trade to the Royal Society.

(W. 3311.)

Sir,

Board of Trade, 23 October 1865.

I AM directed by the Lords of the Committee of Privy Council for Trade to acknowledge the receipt of your letter of the 28th August relative to the preparation of a manual for the guidance and instruction of persons employed in the construction and navigation of iron ships.

In reply, I am to thank you for your communication, and to observe that the object of this Board in proposing a manual of this kind was, in the first and chief place, to place in the hands of those interested in shipping the means of making themselves acquainted with the results of recent observations, which the Royal Society say can now be made available in practice; and the Board of Trade supposed and still hope that this may be done without involving the necessity of Government interference with and supervision over the Mercantile Marine, which in itself is so objectionable.

I have, &c.
(signed) *T. H. Farrer.*

— No. 9. —

The Admiralty to the Board of Trade.

Sir,

Admiralty, 14 September 1865.

IN reply to your letter of the 25th of July, in regard to "compasses in iron ships," I am commanded by my Lords Commissioners of the Admiralty to request you will lay before the Lords of the Committee of Privy Council for Trade the accompanying report from the officer in charge of the Magnetic Department, which will no doubt be found of value in the event of any legislative enactment on the subject, or of Lloyd's Register Committee framing any regulations for the governance of merchant vessels, as it will show the system which has been adopted of late years in Her Majesty's ships with marked success, and afford many useful suggestions applicable to the merchant navy.

With regard to the steps taken for the examination of officers in Her Majesty's Navy in respect to compasses, my Lords desire me to state that all cadets in the training ship "Britannia" go through a course of instruction on this subject under the following heads, viz. :—

- Correcting magnetic courses, or bearings, for variation;
- Correcting true courses, or bearings, for variation;
- Correcting standard compass courses, or bearings, for local deviation;
- The application of corrections, for variation and deviation, &c. :

and before passing into the Navy, they must show that they have attained a proficiency on these points. Subsequently, during the five years they serve at sea, prior to passing for lieutenants or masters, they have to make observations daily, and work questions connected with the deviation of the compass, when their proficiency is again tested by a rigid examination at the Royal Naval College at Portsmouth.

During the whole of an officer's service as a lieutenant or master he is required to make daily observations on every point connected with the navigation of the ship, whereby he becomes practically acquainted with the subject of the deviation of the compass; and the proof that he is so is shown by the fact that every one of Her Majesty's ships is swung for deviation by her own officers at least once in twelvemonths, as well as on any considerable change of geographical position, and a table of errors constructed by them.

Every ship in the Navy is supplied with the Admiralty "Manual of Scientific Inquiry," in which the science of magnetism is treated on, as well as the "Admiralty Compass Manual and Practical Rules for ascertaining and applying the

the Deviation of the Compass" (copies of which are enclosed); and since the introduction of armour-plated ships early in 1863, the attention of officers has been directed by their Lordships to the necessity of their making themselves familiar with the subject in all its bearings, theoretical and practical, with a view to the safety of Her Majesty's ships and accuracy in their navigation.

In regard to your inquiry whether an Admiralty officer, skilled in the use of compasses, could be deputed, on special occasions, to attend inquiries into the causes of wrecks, so as to afford the Court his assistance and advice, I am to state that the officers of the Magnetic Department of this office are fully occupied, and their duties frequently call them to the different seaports, so that any such attendance would be uncertain and inconvenient; but until some permanent provision for such services could be made by the Board of Trade a written opinion could be given on any case which might arise.

I am, &c.
, (signed) *W. G. Romaine.*

(Enclosure in No. 9.)

Admiralty, Hydrographic Department,
11 September 1865.

Sir,

HAVING carefully examined the correspondence between the President and Council of the Royal Society and the Board of Trade, on the magnetism of ships, together with the memorandum appended to the President's letter of the 18th May; and having also considered the requisitions made by the Board of Trade to the Admiralty, by letter of the 28th July 1865, to be furnished, through the Compass Department, with any information or suggestions on the subject, I have to submit the following for your consideration.

The memorandum of the Royal Society is so comprehensive in its general views of the subject, that little remains to be added to the arguments and reasons therein advanced; but in those matters of detail which would require attention in the event of action being taken on the recommendations of that body, there are several suggestions which present themselves, and which possibly may be useful to the Board of Trade. To these I address myself.

To clearly understand the existing difference of administration in compass equipment and efficiency between the Royal and mercantile marine, it is necessary to point out the views the Board of Admiralty entertained, and the steps they deemed it necessary to take on the introduction of steam machinery, and of so much iron in the general construction of ships of the Royal Navy.

Passing over the investigations successively made under their auspices, by Flinders in 1814, Barlow in 1821, and Johnson in 1836, the Admiralty, in 1837, "deeming it necessary to apply some remedy to an evil so pregnant with mischief," referring to the then defective state of the compasses supplied to Her Majesty's ships, "have determined to have the subject fully investigated by a committee of officers conversant with magnetic instruments." Resulting from the labours of this committee, which extended over several years, was not only the improvement of the compass itself, but the establishment of a system of compass adjustment which has since been uniformly followed in Her Majesty's Navy.

The principal features of this system are the following:—

1. The having in each ship a standard compass, distinct from the steering compass, fixed in a position selected, not for the convenience of the helmsman, but for the moderate and uniform amount of the deviation at and around it; by which compass alone the ship is navigated.

2. The requiring each ship to be swung, and to be navigated by a table of errors.

The Admiralty further, at this period (1842), to ensure the proper manufacture and adjustment of the standard compass especially, the selection of its position in the ship, and the general supervision of the "swinging" of the ships of the fleet, created a small compass department, and erected an observatory and offices for the general examination of all the compasses supplied to Her Majesty's ships. As a matter of opinion I may here express my belief, that indirectly this latter establishment has tended very much to the improvement of compasses generally.

The Admiralty at this time also issued a small book of rules, known as the "Practical Rules," for ascertaining and applying the deviations of the compass; these rules have undergone revision and addition from time to time. [The latest edition is appended.]

General rules were also now laid down for guarding, in the equipment of the ship, against the near proximity of iron to the compass; extracts embracing the leading features of these rules will be found in Appendix I.

In 1862, consequent on the increased use of iron in the construction and armature of ships of war, there was issued for the service of the Fleet, the "Admiralty Manual of the Deviations of the Compass," a work which incorporating also the "Practical Rules," placed within the reach of the educated seaman, the theory and general principles of the magnetism of ships, as also so much of the elements of terrestrial magnetism as affected the navigator.

In the mercantile marine, regulations for the examination and adjustment of the compasses are confined to sea-going passenger steamers. I gather from the letter of the Board of Trade in reply to the Royal Society, as indeed I am aware from general personal knowledge, that practically, except perhaps in the larger shipping companies, these regulations are inoperative, or nearly so.

For example, there are no prescribed rules as to the number, the position, or the efficiency of the compasses, and there is no guarantee for the competency of the adjuster, in whose hands the whole arrangements are generally placed. In many ports, and especially that of London, there is inefficient provision for swinging the ships.

It appears unnecessary to remark, after what has just been briefly stated, that the system adopted to ensure security of navigation in the Royal Navy, has no counterpart in the Mercantile Marine. The assimilation in practice of the two services, so far as relates to the more essential points, would certainly be a desirable end to attain.

I have already briefly detailed the two leading features of the Admiralty system: the first of these (the navigating the ship by a standard compass) is in itself so simple, and has proved in practice so secure, and the neglect of it in many cases in merchant ships has been followed by such disastrous consequences, that I conceive there is no question that it should be enforced wherever there are the means of enforcement. Indeed were it rendered imperative by law, that every vessel making a long sea voyage, and every iron vessel, whether employed coasting or foreign should be fitted with a standard compass, I am of opinion this measure would not only directly tend to their secure navigation, but would indirectly tend to foster that knowledge of compass laws and action now found to have become a necessity, when iron ships are the rule and not the exception, as was the case some 20 years past. On the assumption that a measure of this nature must eventually obtain, I have appended a few short and simple rules [Appendix II.] which perhaps might be advantageously recommended by the authority of the Board of Trade, or Lloyd's Register Committee.

With reference to the second leading feature of the Admiralty system.

For many years in the Royal Navy the adjustment practised consisted in the careful selection of a place for the standard compass, and the formation of a table of errors by the process of swinging the ship; and this proved sufficient so long as the deviations were moderate in amount.

In many recent iron-built and iron-plated ships, the amount of deviation is however so large that the employment of magnets to reduce the amount of deviation has become unavoidable; but the correction by magnets, however perfect it may be, is not considered in the Royal Navy as superseding the obtaining a table of errors, and navigating the ship by that table. The benefits which have been derived in the Royal Navy, both as regards the safety of ships and the theoretical and practical knowledge of the subject we have thereby obtained, cannot I think be over-estimated; and I may add that I consider that no compass can be said to be "properly adjusted," of which, whether compensated by magnets or not, a table of errors has not been obtained by the process of swinging the ship, and that table examined by a competent person.

Closely connected with the subject is that of the construction of the compass itself, as regards form and workmanship, magnetic power and adjustment. This subject received much of the attention of the committee I have referred to, and the result of their labours was the production of the "Admiralty Standard Compass," an instrument which has stood the test of 25 years' use with little modification introduced, and which has been adopted in all countries which directed their attention to this subject.

Although indirectly, the introduction of this compass into the Royal Navy has been the cause of much improvement in the compasses of the Mercantile Marine, there is still room for improvement. At present much expense is incurred in matters which are merely ornamental, and in some cases prejudicial. Probably much advantage would be derived from a model compass being fixed upon, which, at a moderate price, would supply the Mercantile Marine with the great desideratum of a compass of sufficient delicacy and accuracy. Considering that a few notes relating to the efficient points of a compass may prove useful, these notes will be found as Appendix III.

There are yet two features in the "Compass question" which appear to me as being worthy of consideration, in any system that may be contemplated for assimilating the practice of the Mercantile Marine to that of the Royal Navy. These are,

1. As to the efficiency of those who engage to perform the adjustments.
2. The periods for examining the adjustments.

By constant practice, but without any very clear knowledge of the principles of magnetism, several skillful adjusters of compasses are to be found at some of the great mercantile ports; these "adjusters" must from their practice be now well known to the Board of Trade Surveyors. The registration of their names, and of the firms employing them, either by the local marine boards or by Lloyd's Committee, might be a desirable step to take as a preliminary measure.

The

The arrangements for swinging ships, I have also heard, are either defective, or practically do not exist at most of the mercantile ports; might not the Board of Trade Surveyors report upon the nature of existing arrangements, and the means generally adopted by the "adjusters?"

As to the periods for examining the adjustments, the recommendations of the Liverpool Compass Committee (*see* page 40, 3d Report, 1861) appear to me to fully meet the case, and have such an important bearing on the secure navigation of iron ships, that I gladly bring them again to notice.

"There appears sufficient reason for requiring that a new iron sailing ship or steamer should be swung immediately before each of the first two or three voyages; that all iron vessels should be swung immediately before the first voyage following any considerable amount of repair; whenever a change has been made in the position of the standard compass; when there is a change of captain, unless the new captain had charge of the vessel during the preceding voyage as chief officer."

In conclusion, I must observe that the present state and prospects of the science, and practice of the correction of the compass, make it impossible to offer with confidence any complete set of suggestions as to the system to be adopted in the Mercantile Marine. This could only be elaborated by careful and continued attention directed to the magnetic character of the ships of the mercantile marine, their compasses, and the capabilities of the officers; and I think it must be assumed that no system can be expected to be satisfactory which does not gradually develop itself under proper supervision.

I have, &c.
(signed) *Frederick John Evans*,
Staff Commander, R.N.,

Chief Naval Assistant in charge of Magnetic Department.

Appendix I. to Enclosure in No 9.

EXTRACTED from the Queen's Regulations and the Admiralty Instructions, for the Government of Her Majesty's Naval Service.

"No iron of any kind is to be placed nor suffered to remain within the distance of seven feet of the binnacle or standard compasses, when it is practicable, according to the size and construction of the vessel, to remove it; and mixed metal, or copper, is to be substituted for iron in the bolts, keys, and dowls in the scarphs of beams, coamings and head-ledges, and also the hoops of the gaffs and booms and belaying pins, which come within the distance of seven feet of the compasses.

"The spindle and knees of the steering wheels which come within the distance of seven feet of the compasses, are also to be of mixed metal.

"Iron tillers which work forward from the rudder-head are not to range within seven feet of the compasses; and in vessels which have iron tillers working abaft the rudder-head, the binnacles are to be placed as far forward from the wheel as may be convenient for the helmsman to steer by.

"The boat's iron davits are to be placed as far as may be practicable and convenient from the compasses.

"All vertical iron stanchions, such as those for the support of the deck, or for the awnings, &c., and likewise the armstands, are to be kept beyond the distance of 14 feet from the compasses in use, so far as the size of the vessel will admit.

"The binnacles for the steering compasses are to be constructed upon a given plan, with tops made to take off; and, in order to prevent improper materials from being deposited therein, they are not to be fitted with doors.

"For the better preservation of the compasses, in every ship a closet is to be constructed in a dry place, sufficiently large for the reception of the ship's establishment of compasses; and it is to be appropriated to that purpose exclusively, the key being kept by the master; and in order that the spare compass cards may never be kept with poles of the same, nearest to each other, cases are supplied which will prevent the possibility of their being packed improperly.

"All ships are to be swung before sailing from the port where they fit out, and subsequently once in each year, for the purpose of ascertaining the errors of the compasses; also immediately on their arrival on a foreign station, or if there has been any great change in the ship's geographical position since the errors were observed."

Appendix II. to Enclosure in No. 9.

SUGGESTED RULES relating to the Compasses of Iron Merchant Ships.

1. It is deemed a necessary equipment for every iron ship to be fitted with a standard, or navigating compass, in addition to one or more compasses for the use of the helmsman.

2. That, so far as the requirements of the ship will permit, special arrangements be made in the course of construction for preparing a place for this compass.

118.

B 3

3. That

3. That the steering compasses being subordinate in importance to the standard compass, less strict precautions are required for their position; but it would in all cases be desirable that these compasses (and of necessity the steering wheel) should not be placed within half the breadth of the ship from the stern-post, rudder-head, and screw-well.

4. The standard compass to be placed at such a height from the deck (not less in any case than 5 feet) as to command a clear view of the horizon above the bulwarks, and to be out of the way of the sails, booms, &c.

5. In ships built with their heads near the north, the standard compass to be placed as far forward as the requirements of the ship will permit.

In ships built with their heads near the south, this compass to be placed as near the stern as convenient, subject to the condition that it should not be within half the breadth of the ship from the rudder head, stern-post or screw-well.

In ships built near east and west, this compass should not be placed near either extreme of the ship.

6. The standard compass to be as far as possible, and not less than 10 feet from the end of any elongated mass of iron, especially if vertical, such as iron stanchions, capstan spindles, steam and stove funnels, ventilating shafts, &c.; and no iron, subject to occasional removal, should be placed within 15 feet of the standard compass, either on the same deck or below it.

7. The standard compass to be placed as far as possible from transverse iron bulk-heads.

8. It would be an extremely desirable arrangement for the deck immediately below the standard compass not to be of iron, but to be filled up with wood for a space which may be called the compass platform. This space should not be of less width than a hatchway (4 to 6 feet), and of as great length fore and aft as convenient, but the length not to be less than the width. No transverse iron deck beams to be under the platform, but if necessary fore and aft iron stringers, on which the transverse beams outside the wooden surface may abut.

9. It would be a desirable arrangement, as far as could be carried out, that no masses of iron, such as boilers, tanks, bulkheads, should be placed immediately below the compass, or within 55° of the vertical line through the centre (the angle being drawn from the compass as centre to the centre of the mass).

10. When the standard compass is placed on a bridge, the foregoing requirements should be as far as possible complied with; the bridge should be of wood, and should not have iron stanchions or rails, especially if covered with brass within 10 feet.

The following Rules are applicable to Steering Compasses.

1. Not to be within half the width of the ship from the stern-post, rudder-head, or screw-well.

2. The spindle of the steering wheel, and the forward support in which it works, not to be of iron.

3. Iron tillers working forward from the rudder head not to range within 6 to 7 feet of the steering compass.

4. Not to be near the upper (or lower) end of elongated masses of iron, especially if vertical, such as steam and stove funnels, capstan spindles, &c., and to be as far as possible from any transverse iron bulkhead.

Special Points for the Consideration of the Naval Architect.

1. When arrangements are made for the compasses to be placed in the after part of the ship, building the vessel head north would ensure exaggerated errors both when upright and heeling.

With building slips in a meridional direction, and with the above arrangements, it would be desirable to build the ship head to the south.

2. Every iron ship after launching, and during the process of first equipment, should as much as possible be kept in a position opposite to that she occupied on the building slip.

Appendix III. to Enclosure in No. 9.

NOTES relating to the Efficient Points of a Compass.

1. THE essential qualities of a good compass may be considered to embrace great sensibility and steadiness, with simplicity of construction. By sensibility and steadiness it is to be understood that the needle is freely to submit to the earth's magnetic force, with power sufficient to steadily obey that force under the varying motions of a ship, without the aid of friction or mechanical impediment; steadiness, or rather sluggishness, produced by the latter causes, being obtained at the expense of accuracy.

Simplicity

Simplicity of construction, so that repairs can be effected by an ordinary skilled mechanic, must be deemed a qualification of merit.

2. The chief points to be attended to in construction are:—

(a). Great directive power of the needle, with little weight, and, consequently, little friction on the point of suspension.

(b). Permanency of the magnetic power of the needle.

(c). Accurate adjustment of the several parts of the compass. This comprises—
(1). The magnetic axis of the needle coinciding with the north and south points of the card. (2). The intersecting point of the axis of the gimbal of the bowl coinciding with the point of suspension of the card. (3). The accurate centring of the point of suspension within the bowl. (4). The perfect impression of the card so that the centring and marginal divisions are not distorted by shrinking or other causes.

3. The advantages of a compound system of needles compared with a single needle.

These are:—(1). Greater directive power being obtained with the same weight. (2). The needles can be placed on their edge, whereby there can be no alteration of their magnetic axis, a condition frequently found in flat bar needles. (3). By placing one (or two) pairs of equal parallel needles with their ends 60° (or 30°) apart, the "wabbling" motion common to single bar needles is avoided; and the following remarkable property also exists with this arrangement of the needles:—

When magnets or soft iron are placed as correctors of the larger deviations due to the iron of the ship, unless the needle—where a single bar is employed—be very short compared to the distance of the disturbing magnet or iron, a deviation is introduced depending on the length of the needle. This deviation disappears with the compound arrangement.

Proceeding from general principles to details, the following are the chief points to be attended to in the construction of a standard compass:—

1. The bowl to be constructed of pure copper, of substantial thickness, and the part adjacent to the needle increased in solidity by an extra copper ring, the ends of the needle being permitted to work as close to the ring as consistent with freedom of motion.

2. The needles to be fitted on the compound system, one pair to be deemed sufficient, and efficiently tempered and magnetized.

3. The sight vane to be arranged so as to turn freely in azimuth without moving the compass bowl or causing disturbance to the card. It should be attached to a graduated circle so as to show the angle between the ship's head and any celestial object, as measured on the horizon, without using the compass card. The sight vane and graduated circle to be attached to the bowl.

4. To be provided with one spare card, two spare caps, and four spare pivots.

5. The caps to be fitted with rubies instead of agates. The pivots to be of steel, hardened and tempered to a dark straw colour.

— No. 10. —

The Royal Society to Board of Trade.

Sir,

Burlington House, 2 November 1865.

I HAVE now laid before the Council of the Royal Society your letter of the 25th of July, referring to the adjustment of the compasses of iron ships, and a copy of my letter of the 28th of August, acknowledging its receipt and adverting to the inquiry you had made as to the preparation of a "manual" on the subject, together with your subsequent letter of 23d October, having reference to the same inquiry.

The President and Council are much disappointed by learning that the Board of Trade are not prepared to give effect to the recommendation, that the system which has been found to work so successfully in the Royal Navy, of combining official and competent superintendence with a proper code of instruction, should be extended to the Mercantile Marine. They consider such superintendence to be essential, not only to the general introduction of a good and efficient mode of compass correction into the Mercantile Marine, but even to the discharge of the duties having respect to the adjustment of the compasses of sea-going passenger steamers, with which the Board of Trade is already charged by the Legislature.

In the memorandum accompanying my letter of the 25th of May, it was stated that many recent losses of iron steamers have taken place, in which it is probable that compass errors have occasioned the loss. The President and Council think it right to call the attention of the Board of Trade to the serious responsibility they incur in cases of loss of life and property arising from the want of a proper system of compass adjustment, by declining to take the course which is pointed out by the concurrent opinion of all competent advisers, as not only the best, but the only method of securing the introduction of such a system. They cannot but look forward to a time when the necessity of a proper supervision will be forced on the Executive by public feeling, excited by some disastrous loss of human life traceable to the want of such superintendence. The question is one of such vital importance that they desire to submit to the consideration of the Board of Trade the accompanying memorandum, replying in some detail to passages in your letter of 25th July.

I have, &c.
(signed) *Edward Sabine*,
President of the Royal Society.

Enclosure in No. 10.

MEMORANDUM.

"THE letter of the Secretary of the Marine Department of the Board of Trade of the 25th of July, to the President, conveying the views of the Board of Trade on the President's letter of the 25th of May, and the memorandum which accompanied it, seem to require some detailed observations.

"To obviate the risk of misapprehension of the scope and object of the memorandum, it appears advisable to state that the main object which the President and Council had in view, was not to suggest that the objects desired might be obtained by framing definite and positive rules, and enforcing their observance by penalties, but primarily to show the importance of some superintendence of the adjustment of the compasses, of at least one important class of iron vessels, which had been entrusted to a department specially constituted for the purpose, and to point out some of the advantages which might be expected to flow directly and indirectly from such a department. The appointment of an officer, with proper assistants, for the purpose indicated, is not, it is apprehended, beyond the existing powers of the Board of Trade, and would not, they conceive, violate any sound principle of political economy.

"The President and Council believe that, in considering the appointment of such an officer a matter of paramount importance, they are supported by the judgment of the persons most competent to form an independent opinion. They have, in the former memorandum, referred to the opinion expressed by the Liverpool Compass Committee. Since that memorandum was submitted to the Board of Trade, the Council have found that a similar opinion was expressed so long ago as the year 1839, by the Astronomer Royal, who then addressed to the Admiralty a memorial of a formal character, of which one of the conclusions was—

"That it is expedient that the general superintendence of the compass in iron ships, for several years at least, be entrusted to some person appointed by the Government."

"The Admiralty declined to appoint such an officer for the Mercantile Marine; but the very system recommended was introduced shortly afterwards into the Royal Navy, where experience has shown the very great advantages to be derived from it, and that in a service in which, if anywhere, obedience to positive rules without the intervention of a superintendent might have been supposed attainable. The Astronomer Royal has recently expressed his adherence to the opinion so expressed by him.

"The President and Council, in the former memorandum, ventured to call attention to the duties in respect of the adjustment of the compasses of sea-going passenger steamers, imposed by the Legislature on the Board of Trade, and to the imperfect mode in which those duties are at present discharged.

"The Board of Trade, in its answer, recognises the importance of the subject, and admits that 'the present practice is far from satisfactory,' and that 'the steps taken by the Board of Trade, under the provisions of existing Acts, are not such as to remedy the evil;' but states that the Board see considerable difficulty in adopting all the suggestions made by the Royal Society.

"The difficulties are stated to be:—

"1. That the powers under which the Board acts apply only to passenger steamers, while the want which the Royal Society wish to meet is felt just as much in the case of other iron vessels, which are becoming more numerous every day.

"2. That the powers of the Board of Trade only extend to obtaining a certificate that the compasses have been properly adjusted. They do not enable the Board of Trade or its officers

officers to see that the compasses are good, or to require, what the Royal Society appear to consider the most important condition of all, that there should be a standard compass (in addition to the steering compass) so placed as to be free from local attraction.'

"With regard to the first of these objections, it cannot be necessary to suggest that the want of power as regards one class of vessels is no reason for not exercising the powers and discharging the duties of the Board as to another class of vessels. There are, however, other considerations which tend to show that it is not necessary to wait for extended powers. In the first place, on the establishment of a new department having new duties, there are some advantages in those duties being confined to a limited number of vessels. Again, all the indirect, and these not the least, advantages to be derived from such a department extend as much to vessels which do not come within the direct operation of the department as to those which do; and, lastly, that shipowners and underwriters, when the advantages of the department have been ascertained, may cause a voluntary submission of many vessels to the supervision of the department.

"It is thus quite possible that experience may show that it is not necessary to obtain any legislative extension of the class of vessels to which the authority of the Board of Trade extends. If, on the other hand, it shall hereafter appear desirable to extend it, it is not to be anticipated that the Legislature will refuse to give extended powers.

"With regard to the second objection, it may be observed that the Board of Trade appear to put an unnecessarily restricted interpretation on the expression 'compasses properly adjusted' in the Merchant Shipping Act, 1854, sec. 301.

"It is submitted with confidence that the expression in question enables and requires the Board of Trade and its officers to see that one compass at least shall be in a position in which it is capable of being properly adjusted—a condition not generally consistent with its being the steering compass, and, therefore, to require a special certificate in the case of any shipowner insisting on sending his ship to sea with only one compass, or in which the navigating compass does not fulfil the conditions prescribed. The information which the Council possess induces them to think that, under the present system, a large number even of sea-going passenger steamers cannot be said to have their compasses 'properly adjusted;' and that owing to the causes pointed out in the 'Memorandum.' The President and Council do not apprehend that if the department recommended were established, its action would be impeded for want of authority.

The President and Council therefore consider that even for the due discharge of the duties already imposed on the Board of Trade by the Legislature, some systematic superintendence on the part of the Board is necessary.

"With regard to the offer of the Board of Trade to communicate to Lloyd's Register Committee any practical rules which the Royal Society can furnish as to the supply, placing, and adjustment of compasses, and as to the effect on them of different modes of construction of the hull of the ship, the Board of Trade may be referred to the very valuable paper by Staff-Commander Evans, the Superintendent of the Compass Department of the Royal Navy, in answer to an application of the Board of Trade to the Admiralty, as containing everything which the President and Council could venture to suggest. The whole of this paper is well worthy of the most careful consideration; but there are some passages in it which bear so directly on the present subject, that they may be more specifically mentioned. In one of these, Captain Evans states that the rule of navigating a ship by a standard compass is in itself so simple, has proved in practice so secure, and the neglect of it in many cases in merchant ships has been followed by such disastrous consequences, that he considers there is no question that it should be enforced, wherever there are the means of enforcement. In another passage, Captain Evans states that he considers that no compass can be said to be 'properly adjusted,' of which, whether corrected by magnets or not, a table of errors has not been obtained by the process of swinging the ship, and that table examined by a competent person. In a third passage, Captain Evans observes that the present state and prospects of the science and practice of the correction of the compass makes it impossible to offer with confidence any complete set of suggestions as to the system to be adopted in the Mercantile Marine. This could only be elaborated by careful and continued attention directed to the magnetic character of the ships of the mercantile marine, their compasses, and the capabilities of its officers; and that he thinks it must be assumed that no system can be expected to be satisfactory which does not gradually develop itself under proper supervision. They trust that the communication of this important paper to Lloyd's and its publication may be followed by beneficial results.

"The Board of Trade further say, that as regards the diffusion of information on the subject of compasses, especially among merchant officers, the first desideratum appears to be a clear and intelligible manual, or set of directions on the subject, containing such practical rules as the present state of science can furnish, and such a statement of the principles as may be necessary for the comprehension of those rules, and inquire whether the Royal Society can put them in the way of obtaining such a manual, stating that any expense connected with its preparation will be readily defrayed by the Board of Trade.

"The President and Council do not consider the manual to be the first desideratum, but, on the contrary, they consider that so long as the present system continues such a manual would have a very limited and partial use. It will be remembered that in the memorandum the Council itself suggested, as part of the general scheme proposed, that notice might be given that after a certain period, say two or three years, a certain amount of knowledge will be required from candidates, and that in the meantime a text-book containing the necessary amount of information might be prepared and published; and they conceive it would be one

of the earliest duties of the proposed department to cause such a text-book to be prepared ; but the President and Council conceive that it would be premature to prepare it until the system to be pursued had been decided on, and without the concurrence of the person to be charged with carrying it into effect.

As regards introducing the subject of the deviation of the compass into examinations in navigation, the President and Council will be happy to give any information or assistance in their power. They feel, however, as in the case of the text-book they have referred to, that such examination should follow, not precede the appointment of a superintendent, and should be under his direction.

As regards inquiries into the causes of wrecks, the Council are happy to find that the Board of Trade are disposed to take some step in the direction indicated in the memorandum.

"In the former memorandum attention was called to the importance, as regards the advancement of the science of the deviation of the compass, of observations of the deviations of the same compass in the same ship at different times and places being made and systematically reduced and discussed. Trustworthy observations of this kind are now among the principal desiderata in this science. As regards such observations, the Board of Trade state that all they can do is to obtain observations from masters of merchant ships in the manner originally proposed by the Royal Society when the Meteorological Department of that office was established, and that the subject will come under the consideration of the Board, with the whole subject of the Meteorological Department.

"The proposal made by the Royal Society in the year 1855, in connection with the Meteorological Department, had reference to terrestrial magnetism, not to the deviations of iron ships ; and they would observe, as regards any observations of such deviations, that the whole scientific value of such observations depends on their being made in strict conformity with corresponding observations made in the same vessel, and under the same precise conditions at home. No such conformity can be expected or ensured unless with some system of supervision. It may be further observed that the value of such observations depends on the compass by which the observations are made being one fulfilling the conditions recommended with reference to the navigating compass. For the Meteorological Department to obtain and deal with such observations it would be necessary that it should possess an officer qualified to discharge, and discharging many of the duties of such a superintendent as is recommended by the Council. Finally, it may be observed that shipmasters cannot be expected to make or transmit such observations, unless encouraged so to do, by knowing that the observations when made have a real value, and that they will be appreciated, made use of, and publicly acknowledged.

— No. 11. —

(W. 4161.)

The Board of Trade to the Royal Society.

Board of Trade, Whitehall,
14 November 1865.

Sir,

I AM directed by the Board of Trade to acknowledge the receipt of your letter of the 2d instant, stating that the President and Council of the Royal Society "are much disappointed by learning that the Board of Trade are not prepared to give effect to the recommendation that the system which has been found to work so successfully in the Royal Navy, of combining official and competent superintendence with a proper code of instructions, should be extended to the Mercantile Marine. They consider such superintendence to be essential, not only to the general introduction of a good and efficient mode of compass correction into the Mercantile Marine, but even to the discharge of the duties having respect to the adjustment of the compasses of sea-going passenger steamers, with which the Board of Trade is already charged by the Legislature."

The President and Council further proceed to call attention to the losses of iron steamers, and intimate that the responsibility for such losses will rest with this Board if they do not undertake the superintendence of compasses in the mode suggested by the Royal Society.

In reply, I am to state to you, in the first place, that the Board of Trade do not yield to the President and Council of the Royal Society in their anxiety to prevent losses at sea, and they are ready with this object to do everything which is within the proper and legitimate scope of their functions as a Government Department.

What the scope of those functions is, and how they can be most usefully exercised, are questions on which they must form their own opinion ; and they

they regret that the opinion they have thus formed is at variance with the views which the President and Council of the Royal Society have thought fit to urge.

As regards the practice of the Admiralty, to which you call attention, I am to point out, in the first place, that there is a wide difference between the relation of the Board of Admiralty to Her Majesty's Navy and that of the Board of Trade to the Mercantile Marine. This difference appears to have been underrated, if not entirely overlooked, by the President and Council of the Royal Society.

The Admiralty are the owners, designers, and generally the builders of the ships of the nation, and in these capacities are bound to use every means in their power to construct the national ships in the best manner, to provide them with the best equipments, and to dictate and enforce upon all persons concerned in building, equipping or navigating them, such arrangements and regulations as the most advanced science and the latest experience can suggest. On the other hand, the Board of Trade are not the owners, designers, or builders of merchant ships; and if they were to take upon themselves the responsibility of regulating the construction of every merchant ship, and requiring her to be provided with what might appear to this Board to be necessary and proper equipments, they would be usurping a power they do not possess, and which, as a matter of policy, they ought not to possess: they would in so doing be taking upon themselves a function which belongs to the shipowner, and which it is his interest as well as his duty to perform efficiently. It can be no part of the functions of Government to put a stop to the free and healthy action of that self-interest, or to relieve the shipowner and his servants from his responsibility for the performance of that duty.

The result thus arising from Government interference would, the Board of Trade are satisfied, be injurious to trade in the first instance, whilst it would in the end be no less prejudicial to the safety of the public, and to the advancement of science.

But if looking to certain precedents the President and Council of the Royal Society should still urge that, in the special and exceptional case of deviation of ship's compasses, it is the duty of the Government to depart from the principles generally admitted in this country, the Board of Trade would reply that, so far as they can judge, the subject of compass deviation is one which, in its present condition, is peculiarly unfit for legislative or administrative interference.

Where a precautionary measure is capable of being reduced to fixed, simple, and intelligible rules of practice, it is possible, even though it may not be advisable, to enforce it by legal and administrative process. But this subject is, so far as the Board of Trade can judge, far from being in that condition.

It appears from the papers submitted to the Board of Trade in this case, that the causes of deviation of the compasses in each individual ship are numerous and dissimilar, and their effects proportionately varied. In addition to the variety of effects due to the variety of causes, these effects seem also to vary according to the build of the ship, the nature and quality of the material of which she is built, and the direction of the line of the keel during building, the nature, quantity and stowage of the cargo, the ship's course for the time being, her position in the water for the time being, the magnetic hemisphere in which she may be, and the varying distance of the ship from the magnetic equator. They vary too, it would seem, from time to time, according to the service on which the ship may be or may have been employed, and with the age of the ship. Science has undoubtedly done much to ascertain the laws that govern these numerous causes of error, but it is obvious, even from the tentative and experimental process which the President and Council of the Royal Society themselves suggest, and from the difficulty they find in preparing the specific directions for which the Board of Trade have asked, that the remedy is not capable of being reduced to fixed or simple rules, or of being enforced without a large and experienced staff of scientific officers, or without an amount of minute arbitrary and indeterminate supervision, which would be intolerable and impracticable. Moreover, so far as the Board of Trade can learn, the highest authorities are not yet agreed as to the principle of the remedy; the practice of the Admiralty, which receives the approval of the Royal Society, being founded in the main on one principle, whilst the practice of the Mercantile Marine is founded on another

and different principle, which is supported by no less an authority than the Astronomer Royal.

In a letter from the Admiralty to this Board, dated the 14th September last, are enclosed some memoranda, by Captain Evans, R.N., of the Compass Department. These memoranda the Royal Society indorse in the printed memorandum enclosed in their last letter.

In them it is stated that the principal features of the system followed in Her Majesty's Navy, are,—

1. "By having in each ship a standard compass distinct from the steering compass, by which compass alone the ship is navigated ;" and
2. "The requiring each ship to be swung and to be navigated by a table of errors."

On the other hand the Astronomer Royal, in his syllabus of a course of lectures delivered this year to the Royal School of Naval Architecture and Marine Engineering, states that he "has no hesitation in giving his own opinion, that the compasses used for directing the ship's course ought to be corrected, and that the efforts of scientific men ought to be directed mainly to the rendering this correction vigorously accurate, and easy of application."

The Board of Trade have, as the President and Council of the Royal Society are aware, already published and circulated Mr. Towson's work, a work "strongly recommended to nautical men," by the Astronomer Royal, and approved by the Assistant Hydrographer ; they are, as the Royal Society are also aware, prepared to print and circulate amongst all persons interested, any practicable limits or directions that the President and Council of the Royal Society, the Admiralty or the Astronomer Royal may be able to furnish, and they are also prepared to procure the best scientific help upon investigations into wrecks in any case in which it may appear that a wreck may have been caused by compass errors.

But the Board of Trade, for the reason above stated, are not prepared to assume the responsibility which would be involved in appointing an officer or officers, whose duty it should be to superintend the compasses of merchant ships, and to enforce upon shipowners and navigators compliance with what such officers may believe to be the latest requirements of science.

In coming to this conclusion the Board of Trade believe that they are doing what is most calculated to promote the free and healthy development of scientific results, as applied to the Mercantile Marine, as well as to further what are their own proper objects, viz. : the benefit of trade and the public safety.

I have, &c.
(signed) *T. H. Farrer.*

— No. 12. —

(W. 4625.)

The Royal Society to the Board of Trade.

The Royal Society, Burlington House,
2 December 1865.

Sir,

I AM directed to acquaint you that the letter from the Board of Trade addressed to the President of the Royal Society (No. 4161. W.), dated 14th November 1865, has been received, and that the same has been laid before the President and Council.

I have, &c.
(signed) *W. Sharpey, M.D.,*
Secretary Royal Society.

— No. 13. —

(W. 3513.)

The Board of Trade to the Secretary of Lloyd's Register.

Board of Trade, Whitehall,
11 December 1865.

Sir,

WITH reference to previous correspondence relative to compasses on board iron vessels, I am directed by the Board of Trade to forward to you, for the information of the Committee of Lloyd's Register, the accompanying copy of a letter* received from Staff Commander Evans, of the Admiralty Hydrographic Department, on the subject, as well as a copy of the syllabus of a course of lectures delivered this year to the Royal School of Naval Architecture and Marine Engineers, at South Kensington, by the Astronomer Royal.

* See Enclosure in
No. 9.

I am also directed to inclose, for the information of the Committee, copies of a further letter upon the same subject recently received from the Royal Society, and a copy of the reply of this Board.

I am, &c.
(signed) T. H. Farrer.

Enclosure in No. 13.

SCIENCE and ART DEPARTMENT of the COMMITTEE of COUNCIL on EDUCATION,
SOUTH KENSINGTON.

Royal School of Naval Architecture and Marine Engineering. Session 1864-65.

SYLLABUS of a Course of Three Lectures on "Magnetical Errors, Compensations, and Corrections, with Special Reference to Iron Ships and their Compasses;" to be delivered in the Old Lecture Theatre of the South Kensington Museum on Thursdays, 1865, March 9, 16, and 23, from 4 to 5 o'clock, p.m., by *George Biddell Airy, Esq.*, Astronomer Royal.

[It is probable that the first lecture will extend to the beginning of the third head, and that the second lecture will advance to the beginning of the fifth head. At the close of each lecture, the Astronomer Royal will wait to give separate explanations to any individual members of the class.]

The subject will be treated under the following heads:—

- I. Terrestrial Magnetism, and the Magnetism of Permanent Magnets.
- II. Transient Induced Magnetism of Iron.
- III. Sub-permanent Magnetism of Iron.
- IV. Correction of Magnetic Disturbing Forces.
- V. Magnetism of Ships, especially of Iron Ships, and Correction of their Magnetic Disturbing Forces on the Ship's Compass.

I.—Terrestrial Magnetism, and the Magnetism of Permanent Magnets.

1. Every magnet has two opposite poles, possessing different properties.
2. Every bar-magnet, when freely suspended, takes a definite position, one end pointing to the magnetic north (the end which points to the north is usually called the "marked end;" in the magnets used in the illustration of the lectures, it will be distinguished as the end painted *red*, the opposite end being painted *blue*). In the following articles the words "north" and "south" are always to be understood as meaning "magnetic north" and "magnetic south."
3. The force which directs a magnet is not simply a force attracting the marked end towards the north horizon, or a force attracting the unmarked end towards the south horizon; but, if it consist entirely of attraction, is composed of equal attractions of those two kinds. It may consist, wholly or in part, of repulsion of the marked end from the south and repulsion of the unmarked end from the north; but if so, those repulsions are

equal. Or, the north part of the earth may attract the red end and repel the blue with equal forces; or the south part of the earth may attract the blue and repel the red, but the forces must be equal. This is proved by the fact that the magnet, as a whole, is not drawn north or south.

4. The direction of one end of a freely-suspended magnet towards the north will be used as the practical definition of the marked end of a magnet.

5. The marked end of one magnet repels the marked end of another magnet, whether it be presented sideways or endways. In like manner, the unmarked end of one magnet repels the unmarked end of another. But the marked end of one attracts the unmarked end of another, and *vice versâ*. The points in which these attractive and repulsive powers appear to be concentrated are called the poles.

6. A horse-shoe magnet is merely a bent bar-magnet, with poles possessing the same properties as those of a straight bar-magnet.

7. If above a large freely suspended bar-magnet a smaller magnet be freely suspended, when it is raised high it takes the same position as the large magnet; when it is lowered near to it, it takes the opposite position, and, at a certain intermediate height, it is indifferent as to position, no force (apparently) acting on it at all.

8. These observations show that the magnetic attraction of the earth is similar in character to that of a bar-magnet, but that the part of the earth which resembles in its magnetism the marked or red end of a magnet is on the south side of the place of observation.

9. General principle of ascertaining the relative magnitudes of forces by vibrations of a suitable apparatus. The relative magnitudes of the terrestrial horizontal magnetic force at different parts of the earth may be ascertained by observing the vibrations of the same magnet at different places. [On Gauss's method, the Astronomer Royal will converse after the lecture.] The forces thus found vary very greatly, being large near the irregular line, called the earth's magnetic equator, and becoming insensibly small near the places called the magnetic poles of the earth.

10. In the preceding articles it has been supposed that the magnet is constrained, either by the nature of its mounting, or by the application of weights, to preserve a horizontal position, as it ought to do in compass-cards (the idea of allowing their needles to dip being totally erroneous).

11. If the magnet is perfectly free, as in the instance of a dipping needle, it takes a position inclined to the horizon; the marked end of the magnet is greatly depressed, pointing, at Greenwich, 68° below the north horizon, or much nearer to the vertical than to the horizontal direction. The direction thus taken by the free magnet is called "the direction of dip," and the plane perpendicular to it is called "the equatorial plane" (this "equatorial plane" is carefully to be distinguished from "the earth's magnetic equator," Article 9).

12. Anticipation of the section on induction. Magnetization of a bar, or reversion of its poles, by "double touch."

13. It is made certain, by reversing the poles of the dipping-needle, that the dipping is not produced by want of balance of the needle, but is a real result of the inclined direction of terrestrial magnetism.

14. At Greenwich, it is inferred from the direction of the dipping needle that the horizontal part of terrestrial magnetic force is less than the vertical part in the proportion of 40 to 99, that it is less than the whole inclined force in the proportion of 3 to 8, and that the vertical force is less than the whole inclined force in the proportion of 51 to 55; all very nearly.

15. Exhibition of the dips in different parts of a meridian of the earth. At the magnetic poles the dip is vertical, and there is no horizontal force. At the magnetic equator there is no dip. South of the magnetic equator the unmarked end of the needle dips. The magnitude of the total inclined force is rather less near the equator than in other parts, but it is entirely effective in the horizontal direction.

16. Disturbance of a suspended magnet by a magnet placed below it. When the lower magnet has its marked end to the north, the directive force on the upper magnet is diminished; and when the lower magnet has its marked end to the south, the directive force on the upper magnet is increased, as is shown by its times of vibration.

17. If the lower magnet is made to rotate in a horizontal plane, the position of the upper magnet is disturbed. During half the rotation the marked end of the upper magnet is turned somewhat to the east; and during the other half, it is equally turned towards the west. The deviation vanishes when the lower magnet lies north and south, either way. The direction of disturbance is that given by the repulsion of similar poles or the attraction of different poles. This disturbance is sometimes called "semicircular deviation."

18. It is important to ascertain how this semicircular deviation will vary in different parts of the earth (where, as stated in Article 9, the magnitudes of the terrestrial horizontal force vary

vary greatly), supposing the same lower magnet to be used, and at the same distance from the upper magnet.

19. Recourse must be had to the mechanical theory of "the composition of forces," the most important theory in the whole circle of sciences, and with which every student of any philosophical subject ought to be perfectly acquainted. Theorem of the "parallelogram of forces."

20. If with a primary force (as, the terrestrial horizontal magnetic force acting on either pole of a magnet) there be combined a new force in a different direction (as, the force of the lower magnet acting on the same pole), the direction of the resultant force will deviate from the direction of the primary (or terrestrial) force. But the greater is the primary force the smaller is the deviation. Thus, if a ship carries a magnet under or near her compass, this magnet will produce but a small deviation when the ship is near the terrestrial magnetic equator (where the terrestrial horizontal magnetic force is large), but will produce a great deviation in high magnetic latitudes (where the horizontal magnetic force is small).

21. If the lower or second magnet be not immediately below the upper or first magnet, but be on one side, whether at the same level or not, being, however, in the position "broadside-on," and if its supporting frame rotate round the vertical axis of the first magnet, the deviation which it produces is semicircular (see Article 17), and vanishes when the second magnet lies north and south. The same holds when the second magnet is "end-on." But if the second magnet is in an intermediate or inclined position, the deviation is semicircular, but the vanishing of the deviation occurs when the second magnet lies in a position differing from north and south.

22. But, supposing the second magnet to be lower, there is one important difference of these actions. If the first magnet is free to dip, then a second magnet broadside-on will not cause the first magnet to dip, but a magnet end-on, or nearly end-on, will cause the first magnet to dip.

22.* The proportion of the actions of one magnet on another may be calculated with great accuracy, by considering each magnet to consist of two centers of force (attractive or repulsive) near its extremities, acting on the similar centers of force of the other magnet, with equal force in all directions, varying inversely as the square of the distance. It results from this that in any given direction of the line joining their centers, the directive force of one needle upon another varies nearly as the inverse cube of their distance. [On this subject the Astronomer Royal will converse after the lecture.]

23. The "astatic needle" is made by fixing two magnets of equal power on different parts of the same frame, with marked ends in opposite positions. The united frame is then insensible to terrestrial magnetism, but either magnet separately will be affected by the local action of a magnet near it.

II.—*Transient Induced Magnetism of Iron.*

24. If a soft iron bar, which has not been subject to any special violence, be presented end ways to the center of a freely-suspended magnet, the direction of the iron bar being either east and west in the horizontal plane, or any direction included in the equatorial plane (see Article 11), then no deviation whatever is produced in the magnet. If it be presented endways to either pole of the magnet, it slightly attracts that pole (a fact to be explained below, Article 26). It is indifferent which end of the iron bar be presented. (The bars used in the lecture will be painted white at one end and black at the other, but this is only for convenience of language in handling them; the properties of the two ends are absolutely the same.)

25. If a second magnet, with an iron bar in front, but separated by a small interval, be presented to the first magnet, and deviation be thus caused, then, upon causing the iron bar to touch the second magnet, the deviation of the first magnet is immediately increased, decreasing again when the iron is separated from the magnet. This shows that the contact of the second magnet has converted the soft iron, for the time of contact only, into a magnet whose poles are in the same relative position as those of the second magnet; and, therefore, a red pole of the second magnet produces a blue pole in that part of the iron which is next it, or *vice versa*. This production of magnetic power in iron by the action of an external magnet is called "induction."

26. This explains the attraction of soft iron by either pole of a magnet. For the magnet pole by induction produces a pole of the opposite character in the nearest part of the iron; and between poles of opposite character there is attraction. (Article 5.)

27. If a bar of soft iron be held in a vertical position; then, upon raising and depressing it, it is found at the end which is lower (whether the white end or the black end) repels the red end of the magnet and attracts the blue end, and the end which is higher attracts the red end of the magnet and repels the blue end. The bar has become a genuine magnet with red end downwards. But this magnetism is only transient; for upon inverting the iron bar the properties of its ends are inverted; and if it is placed in the equatorial plane (Article 11) they vanish entirely.

28. This is explained by induction produced by the powerful terrestrial magnetic force in the vertical direction. (Article 14.)

29. The amount of action depends in some degree upon the connection of the parts of the mass of iron. The same mass in the same general form, but divided into several parts, produces a smaller effect.

30. If a mass, as a cannon-ball, be made to rotate round the suspended magnet in the same horizontal plane, it produces no disturbance when it is north, or south, or east, or west of the magnet's center; but in the intermediate quadrants it produces deviation, changing its character in every successive quadrant, which may be represented (in memory) by saying that the "mass attracts that pole of the magnet which is nearest to it." This is called "quadrantal deviation."

31. The explanation is, that the induction produced by the horizontal part of terrestrial magnetic force converts the mass of iron into a horizontal magnet with red pole always towards the north. (A small magnet carried round always in that position produces a similar effect.) It is to be remarked, that the induction produced by the vertical part of terrestrial force does not appear here; for a small vertical magnet carried round in the same manner produces no effect.

32. It may here be noticed that the quadrantal deviation, thus produced in the compass by a mass of iron in the same horizontal plane, is the same in all parts of the earth. For, referring to the parallelogram of forces (Article 19), if the "primary force" (which is here the terrestrial horizontal force) and the "new force" (which is here the force of the magnetism induced in the mass of iron) be always in the same proportion, the deviation for any definite inclination of the two forces is unaltered. Here they always are in the same proportion; because the magnetism in the iron, which is induced by the earth's horizontal force, is proportioned to it.

33. If the cannon-ball is higher or lower than the magnet, the deviation vanishes when it is north or south, but not when it is east or west; exhibiting a mixture of simicircular deviation (Article 17) with quadrantal deviation (Article 30). The former is produced by induction from the vertical part of the terrestrial force; it is exactly similar to the effect of a small vertical magnet (with red pole downwards, and with center higher or lower than the deviated magnet) carried round the deviated magnet. The latter has been explained above (Article 31)

34. On further examination, it is seen that all effects are explained by induction in the cannon-ball produced by the total terrestrial action in the direction of dip, converting the cannon-ball for the time into a magnet whose red end points down in the direction of dip.

35. Since the induced horizontal magnet (Article 31) has its red end in the position opposite to that of the earth (Article 8), it follows that one effect of the proximity of such a mass of iron at a lower level than the deviated magnet is, on the whole, to somewhat diminish the directive power of terrestrial magnetism.

36. The ordinary process of magnetizing a steel bar by double touch of two permanent steel magnets is a process of induction, differing from those of soft iron only in this respect, that the steel bar, when it has received the magnetism, retains it permanently.

III.—*Sub-permanent Magnetism of Iron.*

37. When a bar or plate of soft iron, in a state of tremor from mechanical violence, is exposed to external magnetic action, it receives induced mechanism in the same manner as iron in a quiet state (Articles 27 and 34); but the induced magnetism is much more powerful, and is for a long time sensibly permanent: it does not change its direction on changing the position of the bar (as in Article 27), and it does not vanish in any position of the bar. The iron bar has become a true magnet, exactly similar in its action to a magnetised steel magnet; its magnetism however diminishes sensibly in a few days, or a few weeks, but a portion remains for many months or years. This has been called "sub-permanent magnetism."

38. The sub-permanent magnetism is most easily produced by striking an iron bar or plate under the action of terrestrial magnetism. The "magnetic anvil," consisting of two planes, one containing the direction of local dip, the other being the equatorial plane (Article 11.)

39. If a bar or plate be placed on the dip-slope of the magnetic anvil, with its white end downwards, and be struck with a hammer, it becomes a powerful magnet, the white end having the properties of a magnet's red end, and the black end having the properties of a magnet's blue end.

40. If, now, it be reversed on the dip-slope with black end downwards, and be struck in the same manner, the black end has the properties of a magnet's red end, and the white end has the properties of a magnet's blue end, the power of the magnet being sensibly equal to what it was before.

41. If

41. If the bar, thus charged with sub-permanent magnetism, be placed on the equatoreal slope of the magnetic anvil, and be struck in the same manner, all magnetism will sensibly disappear.

IV.—*Correction of Magnetic Disturbing Forces.*

42. It is impossible to intercept the action of magnetic disturbing forces upon a magnet or compass by surrounding the compass, &c., with any substance whatever. Nothing is known which interrupts magnetic action, and if such a substance could be found, it would also interrupt terrestrial magnetic action (which is of the same nature as the action of a magnet, *see* Article 8), and the compass, &c., would be useless.

43. The only way of destroying the effect of one magnetic disturbing force is to introduce another magnetic disturbing agent, whose force follows the same laws and has the same magnitude, but always acts in the opposite direction.

44. The disturbing effect of one magnet, or of several magnets, supposed to rotate round the compass, &c., in a horizontal plane, may be corrected by one magnet, or sometimes more conveniently by two magnets.

45. The disturbing effect of a mass of iron at the same level as the compass, which is quadrantal (Article 30), cannot be corrected by an equal mass on the opposite side; such an application would double the disturbance.

46. But it may be corrected by an equal mass at the position 90° distant, or by two smaller masses 90° distant each way (and therefore opposite each other).

47. It may also be corrected by placing another compass near to the disturbed compass.

48. The disturbance produced by an elevated or depressed mass of iron can be corrected by applying an equally elevated or depressed mass on the opposite side (which corrects the semicircular deviation (Article 33), but doubles the quadrantal deviation (Articles 30 and 45); together with a large mass 90° distant, or two masses 90° distant on each side (either of which arrangements may be made to correct that double quadrantal deviation, *see* Article 46).

49. Or it may be corrected by using a small magnet to correct the semicircular part (the small magnet being adjusted by trial to make the disturbance disappear when the mass is east or west), and then applying a small mass or two masses 90° distant to correct the quadrantal part.

50. There is inconvenience in effecting by a magnet the whole or a part of the correction of a disturbance produced by terrestrial induction in masses of iron (as is proposed in Articles 47 and 49), because the action of the magnet is the same in all parts of the earth; whereas the disturbing force produced by induced magnetism in iron is proportional to the terrestrial force, which varies in different parts of the earth (Article 9), and whose direction relative to the horizon is in some places nearly inverted (Article 15): and thus the correction cannot be made universally effective.

51. The correction of the disturbing force of induced magnetism in one mass by the force of induced magnetism in another mass (as is proposed in Articles 46 and 48), is theoretically perfect in all parts of the earth, because both the disturbing force and the correcting force are proportional to the terrestrial force, and therefore they neutralise each other whatever be the magnitude and direction of that terrestrial force. This applies accurately to action on points near the centre of a compass, or applies very nearly to action on all points when the compass is small.

52. When the compass is large and has only one needle, the correction produced by a small mass of iron is not perfect, because it must be brought so close to one pole of the needle that the action on that pole is unduly large. But this inconvenience is almost entirely removed by use of the Admiralty compass with four parallel needles.

53. When the only correction to be effected is that of a quadrantal deviation (Articles 30 and 45), it may be abandoned entirely, provided that a compass-card with modified graduations be used, because the quadrantal deviation is the same in all parts of the earth (Article 32), and therefore the same modification of the compass-card which correctly alters the apparent card-reading in one part of the earth will correctly alter it in every other part. [On the construction of this modified card, the Astronomer Royal will converse after the Lecture.]

V.—*Magnetism of Ships, especially of Iron Ships, and Correction of the Magnetic Disturbing Forces on the Ship's Compass.*

54. Notes on the principal steps made in the investigation of these subjects, by Flinders, Christie, Barlow, Sabine (for wood-built ships containing some iron); by the Astronomer Royal's experiments on the "Rainbow" and "Ironsides"; by Scoresby, Liverpool Committee, Towson, Rundell, Evans (experiments and approximate theory for iron-built ships); by A. Smith (inferences from Poisson's general theory, change in the form of the numbers
118. D exhibited,

exhibited, and theory of the parallel-needle compass). Special treatises, "Admiralty Manual," edited by Captain Evans and Archibald Smith, Esq.; "Practical Information," by John Thomas Towson, Esq., published by the Board of Trade: the latter is strongly recommended to nautical men.

55. For theoretical purposes, and for steering a ship (in a very contracted range of latitude) by a Table of Errors of Compass, it is necessary to measure the disturbance of the compass in numerous positions of the ship. For the practical purpose of correcting the compass, it is only necessary to place the ship in a limited number of positions; eight (at the utmost) at first, and two in subsequent alterations.

56. Methods of measuring the disturbance of the compass:—

By observation, with azimuth sights (at great height above the compass, if necessary), of a very distant mark, whose true bearing by compass is known.

By similar observation of a celestial body, whose astronomical azimuth can be computed, and can be converted into magnetic azimuth. (For this purpose, a knowledge of the local variation is necessary; it can be taken from Captain Evans' very valuable chart.)

By reciprocal observations of azimuths with an azimuth compass on shore, in a position free from disturbance (a method practised by the Astronomer Royal for the "Ironsides," and frequently used since that time).

In circumstances where none of these methods can be used; by observation of a moderately near mark, accompanied with observations which define the position of the compass, and by repeating the observations nearly in the same places upon a wooden raft (as practised by the Astronomer Royal for the "Rainbow").

The selection or invention of the method to be used must be left to the judgment of the operator under the actual circumstances.

57. Methods of conveniently recording the disturbances:—

By table of errors.

By Napier's diagram, with equilateral triangles.

By concentric circles.

58. Investigation of the deviations in the "Rainbow," in which the existing theory was first established.—General obscurity on the subject. Deviations of the steering compass amounting to 50° , marked end drawn to the east, and 50° marked end drawn to the west, according to the position of the ship's head. The first light thrown upon it was derived from observations of the vibration of a magnet freely suspended in the place of the compass, the observations being made with the ship's head N. E. S. W. The vibrations of the same needle were observed on shore. By comparison of these, the proportion of the acting magnetic force on the ship's compass in those different positions of the ship to the earth's undisturbed magnetic force was found. (The acting force with the ship's head nearly south was ten times as great as with her head in the opposite position.) Thus it was found that, representing the earth's force by 100 towards the north, the ship's polar force was represented by 80 towards the stern, and 17 towards the port side, or by 82 in a direction 12° from the stern. (This is the largest that has yet been observed.) By a graphical construction with these elements, based on the parallelogram of forces, it was found that the observed disturbances were accurately represented, with the exception of a small quadrantal quantity, such as would be produced by the iron of the ship nearly towards the head, or towards the stern (Article 30). A magnet of proper intensity was prepared, and placed in the proper position to correct the ship's polar force, and a scroll of iron was placed on one side (Article 46) to correct the quadrantal deviation, and the compass was then sensibly perfect.

59. Treatment of the deviations in the "Ironsides."—In this operation was invented the method of using two magnets instead of a single one; a most important step, because it gave the means of effecting the correction without calculation. The ship's head was placed magnetic north or south, by the aid of a shore compass viewing her masts, and a magnet was placed on the ship's deck in an athwart position, ahead or astern of the compass, and was slid nearer or farther till it caused the compass to point correctly. Then the ship's head was placed magnetic east or west, and a magnet was placed in a fore-and-aft position on the deck on one side of the compass, and was slid nearer or farther till it caused the compass to point correctly. The first magnet does not disturb the compass in the ship's second position, and the second magnet does not disturb the compass in the ship's first position. Thus the compass was made correct in the four cardinal positions of the ship. Then the ship was placed in an intermediate position, her head 45° east of north, or west of north, and a mass of iron was placed on one side of the compass to correct quadrantal deviation. Then the compass was sensibly perfect. This is the process which is still universally employed. The object in placing the magnets either below the compass or broadside-on, is to avoid introducing a vertical force, which is produced with a magnet end-on (Article 22).

60. Exhibition of the process of correction in a model.

61. Description of the different substances which have been adopted for correction of the quadrantal deviation; scroll of iron plate, small box filled with fine iron chain, masses of cast iron, &c.

62. Continuation

62. Continuation of history.—After a time it was found that the polar magnetism of a ship, which was supposed to be permanent, was not really permanent, and the term “sub-permanent” was introduced; in particular, reasons appeared for supposing that the polar magnetism changed rapidly in the course of a ship’s first voyage. The Liverpool Committee was appointed to inquire into the whole subject; their three reports are probably the most valuable documents that we possess, referring to these questions. The inquiries were conducted principally by Mr. Towson and Mr. Rundell. Among their most important conclusions were these:

That the direction of a ship’s polar magnetism, as affecting her compass, might always be inferred from the position in which she was built.

That, therefore, it was to be concluded that her magnetism was induced sub-permanent magnetism (Articles 37, 38, 39) produced by the hammer-blows in uniting her plates when building.

That much of this was soon lost, when the ship was afloat, but that a part remained, with little alteration, for many years.

The Astronomer Royal discussed the records of several ships of the Royal Navy, and also those of the “Royal Charter,” and showed that after the first voyages, the change of polar magnetism was small, and generally in the nature of diminution. (Dr. Scoresby’s special observations on the “Royal Charter,” had no important relation to the ship’s compass.)

63. Very important observations on this matter were made by Captain Evans and Mr. Rundell, on the “Great Eastern,” which they followed through several stages after its launching. The transversal polar magnetism diminished very greatly.

64. Among the points elicited by the inquiries of the Liverpool Committee was this, that in many, but not in all, of the merchant ships which they examined, the correction of the compass effected in England failed so much in southern latitudes as to lead to the impression that the ship’s polar magnetism had changed considerably. As far as had been observed, there was no similar change in ships of the Royal Navy. Remarking that in merchant ships the compass is nearer to the stern than in ships of the Royal Navy, Mr. Rundell was led to a practical conclusion which ought in all cases to receive attention. The history of an earlier discovery is first to be mentioned.

65. Captain Flinders, who made a voyage of discovery in a wood-built ship in the first years of this century, remarked with great accuracy the errors of his compass, with the ship’s head in different directions, and with the ship on different sides of the magnetic equator, and with singular sagacity referred their cause to the induced magnetism in the vertical iron stanchions (Article 27), which were principally ahead of the compass. He suggested that they might be corrected by placing a vertical iron bar astern of the compass. General Sabine, in discussing later voyages, remarked that the change due to position on the globe, did not *immediately* follow the change of ship’s position, which showed that the magnetism of the stanchions, &c., partook in some measure of the nature of sub-permanent magnetism (Article 37). These remarks nearly exhaust the subject of disturbances in wood-built ships.

66. Mr. Rundell, apparently without any knowledge of Captain Flinder’s proposal, remarked that the compass of merchant ships is not far in advance of the great vertical iron bar of the stern post, accompanied in screw steamers by another bar of the rudder post, and that a magnet which corrected the influence of these bars in north latitudes would increase it in south latitudes, but that a correction valid in all latitudes might be made by fixing a vertical iron bar ahead of the compass. This has been done in several instances, apparently with uniform success. The amount of correction to be produced ought probably to be such as will leave the fore-and-aft magnetism at that place nearly similar to that on other parts of the ship.

67. The disturbance of the compass is undoubtedly simpler when a ship has been built with her keel in the magnetic meridian, but there does not appear to be any strong reason for deciding between the positions of head north and head south.

68. After every care has been taken, the ship’s sub-permanent magnetism will change (usually diminishing slowly), and arrangements ought to be made for meeting this change. Nothing appears preferable to Gray’s Adjustable Binnacle.

69. For the application of this, it is necessary to be able to place the ship’s head once north (or south), and once east (or west), using for this purpose either a land mark or a celestial body. The dumb card is the most convenient instrument for placing the ship’s head in the proper position.

70. Adverting now to the quadrantal deviation. In merchant ships the quadrantal deviation is usually 3° or 4°, or perhaps in a few cases 6°, and in nearly every case it is of that kind which would be produced by a mass of iron exactly ahead or exactly astern of the compass (Article 30), and this may be corrected by a mass of iron placed exactly on one side, or by masses placed exactly on both sides (Article 46), and an error of 6° is not too great, especially when the four-needle card is used, to prevent this from being done conveniently.

71. But in the armed ships lately built for the Royal Navy, with iron decks and iron in every part, the quadrantal deviation amounts to 14° , and it is difficult to correct this by a mass of iron.

72. Perhaps it might be corrected by another compass (Article 47), but the same correction would not be valid in different latitudes. (Article 50.)

73. The Astronomer Royal prefers a modified card. (Article 53.)

74. It has lately been discovered by Captain Evans, that in the wood-built ships covered with the thickest armour plates, the quadrantal deviation is small, not exceeding 3° or 4° . This is analogous to what is described in Article 29. It appears to show that the riveting of the plates of an iron-built ship produces what may be called "magnetic contact," but that the juxta-position of large masses of iron does not produce magnetic contact. In the latter case, the simple theory of the Astronomer Royal (Phil. Trans., 1839), appears preferable to the general theory of Poisson. The form of their results is the same, but the coefficients are different.

75. In the turret ships lately built, it has been necessary to place the compasses out of the central line of the ship's deck. That excentric position modifies the law of quadrantal deviation in this way: that the quadrantal deviation is represented by the effect of a mass of iron not exactly ahead or exactly astern of the compass, but in a direction somewhere intermediate between the fore-and-aft direction and the transversal direction. The difference which this would make in the correction would be the following: after having adjusted the transversal magnet to make the correction complete with the ship's head north, the correction would be found incomplete with head south; and the adjustment must be altered till the error is divided between the two positions. In like manner with head east and head west. By remarking the magnitudes of the residual errors in different positions, the operator will determine with considerable accuracy, the direction of the ship's head when the error is 0; and the mass of iron must be either towards N. or S., or towards E. or W., with the ship's head in that direction. That choice of positions being determined for the mass, the ship must be turned 45° from the said direction, and the mass is to be adjusted to make the compass correct. A modified card might be adapted to the compass, but it would require a special commencement of readings.

76. The order of operations ought in all cases to be this:—

(1.) For a compass near the stern Rundell's vertical bar ought to be fixed.

(2.) The two magnets, or systems of magnets, for effecting the correction with the ship's head N. E. S. W. ought to be applied.

(3.) The masses of iron for correcting the quadrantal deviation ought to be applied, or the modified card ought to be mounted. These will never require alteration, whatever alteration be made in the magnets.

(4.) The ship should, if possible, be sent on a short voyage; or should be exposed to agitation by the sea, and to tremor by her machinery, in different positions of her head for several days.

(5.) The positions of the magnets ought to be re-adjusted. It will probably be sufficient to place the ship once with her head N. (or S.), and once with her head E. (or W.)

77. It is of very great importance that the ship should not be hurried out immediately for a long voyage, but that she should be exposed to agitation and tremors several days at least, and that her magnets should be re-adjusted before sailing on a long voyage.

78. On the voyage, the captain should be prepared to re-adjust the magnets, as is described in Articles 69 and 59 (omitting all that relates to correction of quadrantal deviation, which will never alter).

79. Some of the methods described in the Admiralty "Manual" relate to the determinations in different localities, and at different times, of the principal elements of magnetic disturbance, as, the error of the lubber-line, the sub-permanent or other polar forces towards the ship's head and the ship's side, the apparent direction and measure of action of the masses which act by induction (Article 30), and the loss of directive power (Article 35). In instance of the importance of these determinations it may be pointed out that in iron ships of the Royal Navy the loss of directive power is from $\frac{1}{2}$ to $\frac{3}{4}$ of the whole. These methods are of the highest value for the philosophical investigations connected with compass-disturbance, and are strongly recommended to the advanced mathematician; but they are not likely to be useful in the merchant service.

80. Others of the methods in the "Manual" relate to the possibility of converting a table of errors determined for one locality into a table of errors applicable to another locality. It does not appear probable that such a process can ever be used in the merchant service.

81. On the general question of "correction or non-correction" of the compass, the arguments appear to stand as follows:—(It is to be remarked that, if the ship's sub-permanent magnetism undergoes a change, it affects both systems with equal injury, and therefore that occurrence is omitted in the comparison.)

NON-CORRECTED COMPASS.

(Using a Table of Errors.)

The directive power on the compass is extremely different on different courses.

The principal part of the tabulated errors arises from sub-permanent magnetism, whose effects in producing deviation vary greatly in different parts of the earth (Article 20).

It is therefore absolutely necessary from time to time to make a new Table of Errors by observations in numerous positions (not fewer than eight) of the ship's head.

In difficult navigation, as in the channels of the Thames or the Mersey, especially with frequent tacks, the use of a Table of Errors would be attended with great danger.

82. The Astronomer Royal has no hesitation in giving his own opinion that the compasses used for directing the ship's course ought to be corrected, and that the efforts of scientific men ought to be directed mainly to the rendering this correction rigorously accurate, and easy of application. But the captain, who desires to make his voyages really serviceable to magnetic science, must have one compass on board which either is not corrected, or whose correction is never altered, and must frequently observe it, not for the purpose of steering his ship, but for the collection of magnetical facts. This, however, is to be considered as a philosophical experiment, not as an aid to navigation.

83. The disturbances and their corrections, as treated up to this Article, apply to a ship on even beam, or without any heel; and, by using the methods above described, there is no difficulty whatever in making the correction sensibly perfect. The heeling, at present, offers considerable difficulty, not in estimation of its magnitude, or in application of a correction at any one place, but in doing this in a way which will apply at all parts of the earth.

84. The general law of the effect of heeling is this:—When a ship's head is east or west, no sensible effect is produced by heeling. When the ship's head is north or south, heeling produces the greatest effect. Usually, but not in all cases, the marked end of the needle is attracted to the windward or raised side of the ship in north latitudes, and the unmarked end in south latitudes. Usually, in iron ships, with ship's head north or south one degree of heel produces one degree of disturbance of the compass; but in some instances one degree of heel produces two degrees of disturbance of the compass.

The disturbance by heeling appears to arise immediately from these separate causes:—

(1.) Part of the action of the sub-permanent magnetism is perpendicular to the deck and this has not been touched by the operations of correction of the forces in the plane of the deck (if the magnets are applied broadside on). When the ship heels, this untouched magnetism is inclined to the horizon, and produces partly the effect of horizontal magnetism, and thus disturbs the compass. If the blue end of the magnetism perpendicular to ship's deck is uppermost, it will attract the marked or red end of the compass.

(2.) If there are masses of iron fore-and-aft of the compass, and also masses of iron to starboard and port of the compass, and other masses added for correction of quadrantal deviation, the masses fore-and-aft will produce no new effect from heeling, but the masses to port and starboard will be raised on the windward side and lowered on the leeward. The red end of the former, which is its lower surface, will be nearest to the needle, and will repel the marked end; and in like manner the upper or blue magnetism of the mass on the lee side will attract it.

(3.) A mass near the ship's keel, considered in the same way, will have an effect opposite to that of (2) but agreeing with that of (1).

(4.) A transversal deck-beam nearly under the compass will, on being inclined by the heeling, have blue magnetism in its higher end, which will attract the marked end of the compass, agreeing with (1) and (3). It appears that in most instances, the aggregate effects of (1), (3), and (4), exceed that of (2).

85. Attempts have been made to separate these various effects by theoretical considerations, but their success appears doubtful. [The Astronomer Royal will converse on these after the Lecture.]

86. There appears to be no safe way of determining the amount of the effect of heeling, except by making the ship to heel, and observing how much the compass is affected; either by heaving her down (in dock), or by subjecting her to the action of the wind (on a river or sea).

87. In all cases the effect can be corrected by fixing a magnet below the compass in a position perpendicular to the deck. For, when the ship heels, this magnet becomes inclined,

and a portion of its magnetism acts horizontally, and can be made (by trial) exactly to neutralise all the other effects.

88. Gray's binnacles are adapted to receive such a magnet, and to give power of adjusting it. It is carefully to be remarked that this magnet must be mounted and adjusted *after* fixing the masses of iron used to correct quadrantal deviation (Article 61).

89. Either the magnet may be adjusted in position while the ship is inclined, or the following course may be pursued:—By means of a "clinometer," the ship's inclination may be observed while experiments are made on the deviation, and thus a proportion may be obtained between the angle of heel and the angle of deviation. By means of an experimental pendulum (whose axis passes through the centre of a compass-card) on which a magnet can slide, the position may be found at which a magnet will produce the same proportion between the angle of heel and the opposite deviation. The distance of this from the centre of the experimental card is the distance at which the same magnet must be fixed below the ship's compass.

90. On a voyage into southern seas, these experiments ought to be repeated.

91. For experiments on iron ships, the following apparatus (among others) may be found desirable:—

Two or more azimuth compasses (prismatic compasses also are sometimes convenient).

A dumb card.

A vibrating needle for horizontal intensity; either suspended by a silk fibre, or in the form used by Captain Evans.

A deflexion-needle for horizontal intensity, in Mr. Towson's form.

A vibrating needle for vertical force, in Captain Evans's form.

A dip-needle, balanced to a definite angle, for vertical force, in Mr. Towson's form.

An ordinary dipping needle.

A clinometer, or pendulum with graduated arc.

A pendulum adapted to carry a magnet.

Magnets.

Iron for induction experiments.

Magnetic anvil.

[The Astronomer Royal will explain any of these after the Lecture.]

— No. 14. —

The Secretary of "Lloyd's Register" to the Board of Trade.

"Lloyd's Register of British and Foreign Shipping,"
2, White Lion Court, Cornhill, E.C.
14 December 1865.

Sir,

I DULY received your letter of the 11th instant, with its accompanying papers, having reference to the variation of compasses in iron ships.

And having laid the same before the Committee of this Society at their meeting to day, I am directed to convey to you the expression of their entire concurrence in the views set forth in your letter, dated 14th November, addressed to the President of the Royal Society, in answer to a communication from that body, indicating the course which, in the judgment of the Council, should be taken by the Board of Trade, in relation to the intricate and very imperfectly understood subject above adverted to.

I have to add, that with a view to giving a more extended circulation to the opinions enunciated by the Board of Trade, among shipowners who are so deeply interested in the matter, the Committee have instructed me to transmit your communication to the Committee for managing the affairs of Lloyd's, and they trust this step will not be disapproved by you.

I am, &c.
(signed) Geo. B. Seyfang,
Secretary.

— No. 15. —

(W. 4831.)

The Board of Trade to the Secretary of Lloyd's Register.

Board of Trade, Whitehall,
22 December 1865.

Sir,

I AM directed by the Board of Trade to acknowledge the receipt of your letter of the 14th instant, relative to previous correspondence on the subject of variation of compasses, and stating that a copy of it was to be communicated to the Committee for managing the affairs of Lloyd's.

This Board request me to state their satisfaction at finding that the Committee of "Lloyd's Register" agree with them, and to request that if the correspondence has been printed, the Committee of "Lloyd's Register" will have the goodness to supply the Board of Trade with some copies.

I am, &c.
(signed) *T. H. Farrer.*

— No. 16. —

The Secretary of Lloyd's Register to the Board of Trade.

"Lloyd's Register of British and Foreign Shipping,"
2, White Lion Court, Cornhill, E.C.

22 January 1866.

Sir,

WITH reference to my letter of the 29th ultimo, I lose no time in transmitting to you the accompanying printed copies of your letter of the 11th ultimo, with its enclosures respecting the variation of compasses in iron ships, and shall have much pleasure in furnishing you with additional copies if you desire to have them.

I am, &c.
(signed) *George B. Seyfang,*
Secretary.

Enclosure in No. 16.

"Lloyd's Register of British and Foreign Shipping,"
2, White Lion Court, Cornhill, E. C.,
28 December 1865.

THE great importance of attention being paid to the adjustment of the compasses of iron ships, has induced the Committee of "Lloyd's Register" to print and circulate amongst the owners of iron ships, the following correspondence,* which has been forwarded to them by the Board of Trade.

Although the matter does not come strictly within the province of this Society, yet the Committee, being anxious to promote everything that may tend to the preservation of life and property, earnestly entreat the attention of the captains of ships to this important question, and they also take the opportunity of intimating the necessity of attention to the heaving the lead, which is the best security when approaching the land.

By order of the Committee,
George B. Seyfang,
Secretary.

* Viz.—Nos. 13, 14, and 15, Enclosure and Extracts from Appendices in No. 9, No. 10, and No. 11.

DEVIATION OF COMPASSES.

COPY of CORRESPONDENCE between the Royal Society, the Board of Trade, the Admiralty, and the Committee of "Lloyd's Register," with respect to the DEVIATION of COMPASSES.

(Mr. Graves.)

***Ordered, by The House of Commons, to be Printed,
16 March 1866.***

DEVIATION OF COMPASSES.

RETURN to an Order of the Honourable The House of Commons,
dated 19 March 1866;—for,

COPIES “of the following PAPERS relative to DEVIATION of COMPASSES,—

- “Of a LETTER from the Royal Society to the Board of Trade, dated the 25th day of May 1865, and of the inclosure therein:”
- “Of the LETTER from the Board of Trade, dated the 25th day of July 1865, in answer thereto:”
- “Of the LETTERS from the Board of Trade to the Admiralty and Committee of Lloyd’s Register of the 25th day of July 1865:”
- “Of the LETTER and Inclosures from the Royal Society to the Board of Trade, dated the 2nd day of November 1865:”
- “Of the REPLY of the Board of Trade, dated the 14th day of November 1865:”
- “Of LETTER from the Board of Trade to the Committee of Lloyd’s Register, dated the 11th day of December 1865, and of the reply thereto:”
- “And, TABULAR STATEMENT showing the Means adopted for Correcting or Ascertaining the DEVIATION of the COMPASSES, during the past Three Years, in each of Her Majesty’s Ships, ‘Achilles,’ ‘Bellerophon,’ ‘Black Prince,’ ‘Lord Warden,’ ‘Minotaur,’ ‘Prince Albert,’ ‘Prince Consort,’ ‘Research,’ ‘Resistance,’ ‘Scorpion,’ ‘Royal Oak,’ ‘Warrior,’ ‘Wivern,’ and ‘Zealous;’ and showing also, under the Name of each Ship, the Dates on which the Ship was Swung for Deviation, or on which Compensating Magnets were applied, or on which the Position of the Magnets, or of the Compass, was altered; and showing, further, the Time occupied by the Operation on each occasion, and the Computed Cost of each Verification or Adjustment.”

NOTE.—The information required by the six first paragraphs of this Order has been already furnished in pursuance of an Order of the House of Commons, dated 6 March 1866.—
(See Parliamentary Paper, No. 118, of the present Session.)

Admiralty, }
4 May 1866. }

JOHN HENRY BRIGGS,
Chief Clerk.

(Mr. Wyld.)

Ordered, by The House of Commons, to be Printed,
7 May 1866.

TABULAR STATEMENT showing the Means adopted for Correcting or Ascertaining the **DEVIATION** of the **COMPASSES**, during the past Three Years, in each of Her Majesty's Ships, "Achilles," "Bellerophon," "Black Prince," "Lord Warden," "Minotaur," "Prince Albert," "Prince Consort," "Research," "Resistance," "Scorpion," "Royal Oak," "Warrior," "Wivern," and "Zealous;" and showing also, under the Name of each Ship, the Dates on which the Ship was Swung for Deviation, or on which Compensating Magnets were applied, or on which the Position of the Magnets, or of the Compass, was altered; and showing, further, the Time occupied by the Operation on each occasion, and the Computed Cost of each Verification or Adjustment.

ACHILLES - - -	23 December - 1863	Before leaving dock in Chatham Dockyard, where built:—Deviation, horizontal and vertical forces observed at proposed positions of standard and steering compasses, without swinging.
	28 July - - 1864	Ship fitting for sea, moored head and stern off Gillingham; River Medway; same observations, as above repeated, without swinging.
	26 September - "	Deviation, horizontal and vertical forces observed at standard, fore compass, steering and main deck compasses; ship still moored head and stern, without swinging.
	11 October - "	Ship still moored head and stern, but direction of head reversed; same observations, as foregoing, repeated, without swinging.
	12 and 13 October "	Sheerness:—Deviations obtained for all compasses (<i>see</i> above) on all points as ship swung to the tide; assistance rendered at slack water to cant ship by dockyard steam-tug; no magnets placed; horizontal and vertical forces observed on various points.
	5 December - "	Plymouth Sound:—Deviations obtained for all compasses on all points; observations made by Queen's harbour-master; steam-tug employed, when necessary, to swing the ship; horizontal and vertical forces observed; vertical magnet placed at bridge compass to reduce vibrations.
	April - - 1865	Portland:—Deviations observed by master of ship as she swung to the winds and tide, on various points.
	4 May - - "	Lisbon:—Observations for deviation and horizontal force on various points made by master of Her Majesty's ship, "Defence," at standard compass.
BELLEROPHON - - -	24 June - - "	Plymouth Sound; swung by Queen's harbour-master, assisted by steam-tug, for deviations of compasses, on all points.
	29 July - - 1865	In dock at Chatham:—Deviation, vertical and horizontal forces observed at two proposed positions for standard compass, without swinging.
	16 September - "	In dock at Chatham; same observations, as above, repeated, and also at position of steering compasses, without swinging.
	22 January - 1866	In dock at Chatham; same observations repeated, without swinging.
BLACK PRINCE - - -	6 and 7 March - "	At Sheerness:—Deviations obtained of all compasses; viz., standard, steering, and main deck on various points; vertical and horizontal forces also observed. Correcting magnets then applied to each compass, and deviations again observed on all points. Ship swinging to tides; steam-tug employed at slack water to cant the ship.
	January - 1863	Compasses originally placed in August 1862; correcting magnets applied to main deck compass alone; no alteration in compass fittings, or arrangements, since August 1862.
	January - 1863	At Lisbon:—Ship heeled over to clean bottom; at which time advantage taken to observe deviations of standard compass by the master, on all points, as ship swung to the tide.
	June and July "	At Portland:—Deviations of standard compass obtained by master, on various points, as ship swung to the various winds.
	January - 1864	Off Madeira:—Deviations, on several points of compass, astronomically determined by master, as ship under way.
	February - "	At Lisbon:—Deviations of standard compass, and horizontal forces observed by master, on various points, as ship swung to the tide.

BLACK PRINCE— <i>cont.</i>	March and April	1864	Portland:—Same observations repeated by the master, as ship swung to the various winds.
	October - - "		At Portland:—Same observations repeated, under the same circumstances.
	March - -	1865	At Spithead and Portland:—Deviations of standard compass observed by master, on various points, as ship swung to winds and tides.
	February - -	1866	Queenstown, Ireland:—Same observations repeated by the master.
LORD WARDEN - -	29 July - -	1865	In dock, at Chatham:—Deviation, vertical and horizontal forces observed at two proposed positions for standard compass, without swinging. <i>Note.</i> —This ship still in progress of fitting.
MINOTAUR - -	12 December -	1863	Just before launching:—Observations for deviation, horizontal and vertical forces made at selected stations, without swinging.
	28 March - -	1865	In Victoria Docks, alongside wharf:—Observations for deviation, horizontal and vertical forces made at standard, steering, poop, and fore-standard compass positions, without swinging.
	30 March - -	"	On passage from Victoria Docks to Sheerness:—Deviations of standard and steering compasses obtained by astronomical bearings under way, on various points, with horizontal forces.
	10 April - -	"	Deviations obtained for standard, steering, and poop compasses, on various points, as ship swung to the tide, assisted at slack water by a steam-tug; correcting magnets then applied to each of these compasses.
	11 April - -	"	Deviation of corrected compasses on all points; horizontal and vertical forces observed and completed as ship swinging to tides, assisted at slack water by steam-tug.
	24 June - -	"	At Portsmouth, alongside dockyard jetty:—Deviation and horizontal force observed at standard compass, without swinging.
	1 and 4 July -	"	Spithead, under way, on trials, by master of "Victory," preparatory to cruising in Channel for experimental purposes:—Deviations obtained on various points.
	25 September -	"	At Portsmouth, alongside dockyard jetty:—Deviation and horizontal force obtained at standard compass, without swinging.
	7 December -	"	At Portsmouth, alongside dockyard jetty:—Deviation, horizontal and vertical forces observed at poop, standard, steering, bridge, and lower deck compasses, without swinging.
	24 January -	1866	At Spithead:—Deviations of all compasses obtained on all points by master of Her Majesty's ship, "Victory," while ship under way, preparatory to cruising in Channel on experimental trials.
PRINCE ALBERT -	25 November -	1865	In basin, at Woolwich Dockyard:—Deviations, vertical and horizontal forces determined at two proposed positions for standard compass, and at upper and lower deck steering compasses, without swinging.
	20 January -	1866	Deviation and horizontal force determined at lower deck and upper deck steering compasses, and standard compass, without swinging.
	8 February -	"	Deviation and horizontal force determined at lower deck foremost steering compass, without swinging.
	21 February -	"	Ship swung at Greenhithe, River Thames:—Deviations observed at all compasses, and on all points; horizontal and vertical forces observed at same time. Correcting magnets then applied to steering compass on lower deck. Four hours occupied in swinging by hawsers.
PRINCE CONSORT -	May - -	1863	Milford Haven, after launching, preparatory to being navigated to Plymouth, to fit for sea:—Observations of standard and steering compasses for deviation made on various points, by master attendant in charge. Horizontal force observed also.
	28 October -	"	Plymouth Sound; swung by Queen's harbour-master, preparatory to going to sea:—Deviations of standard and steering compasses obtained on all points.
	8 February -	1864	Hamoaze:—Deviations of standard and steering compasses observed on various points, as ship swung to the tide. Horizontal and vertical forces observed. Correcting magnets then applied to these compasses.
	18 February -	"	Plymouth Sound; swung by harbour-master:—Deviations of all compasses observed on all points before ship proceeding to sea.
	November -	1865	Tarbert, Ireland:—Deviations obtained by master of ship on all points, as ship swinging to winds and tide.

RESEARCH	-	-	January	1864	Pembroke Dock:—Swung by master attendant in charge, on various points, for temporary navigation to Plymouth.
			12 May	"	Plymouth Sound:—Swung by Queen's harbour-master, for deviation of all compasses, on all points, before proceeding to sea.
			25 August	"	Sheerness, after refit:—Swung by master of flag-ship, for deviation of all compasses, on all points, before proceeding to sea.
RESISTANCE	-	-	-	-	Compasses originally placed in August 1862. No correcting magnets applied. Since August 1862, no alterations in compass fittings or arrangements.
			19 June	1863	Portsmouth:—Swung for deviation of all compasses, on all points, by master of Her Majesty's ship, "Victory," before proceeding to sea.
			1 December	"	Portsmouth:—After refit in dock, swung for deviation of all compasses, on all points, by master of Her Majesty's ship, "Victory."
			9 December	"	Spithead, before proceeding to sea:—Vertical and horizontal forces observed at standard compass; horizontal forces at steering and main-deck compasses, as ship swung to tide.
			19 January	1864	Malta:—Deviations of all compasses, on all points, determined by master of flag ship.
			27 December	"	Malta:—Same observations repeated.
			26 December	1865	Malta:—Same observations repeated by master of ship.
SCORPION	-	-	31 October	1864	In great float at Birkenhead, secured to wharf:—Deviations, horizontal and vertical forces observed at proposed positions for standard and steering compasses, without swinging.
			14 and 15 March	1865	Standard and steering compasses placed (same place):—Preliminary observations for deviation without magnets made, and vertical and horizontal forces determined. Correcting magnets placed to each compass. Superintendent of compasses assisted by Mr. Cairns, who furnished the correcting magnets to the ship:—Deviations obtained on each point after correction; ship swung by crew in great float preparatory to being navigated to Plymouth.
			3 August	"	Plymouth Sound, after docking and refit, swung by Queen's harbour-master for deviation of all compasses, on all points.
			23 September	"	Portsmouth, in dock. Horizontal and vertical forces with deviation observed at standard compass, without swinging.
ROYAL OAK	-	-	17 January	1863	In dock at Chatham:—Deviation, horizontal and vertical forces obtained at position of standard, steering and main-deck compasses, without swinging.
			19 March	"	Same observations on various points repeated on the ship being taken out of dock, and proceeding down the River Medway to Folly Point anchorage, to prepare for sea.
			11 April	"	Same observations repeated as ship swinging to tides.
			3 June	"	Sheerness:—Swung by superintendent of compasses and master of flag-ship for deviations of all compasses on all points before proceeding to sea; horizontal and vertical forces also observed. Correcting magnets applied to main-deck compass and compass on fore bridge.
			6 January	1864	Plymouth Sound:—Swung by Queen's harbour-master before proceeding on foreign service, for deviation of all compasses on all points.
			1 March	"	Malta:—Deviations of compasses on all points obtained by master of ship.
			8 May	1865	Malta:—Same observations as above, made by master of ship.
			-	-	Compasses originally placed in September 1861. Correcting magnets alone fitted to main-deck compass. Since September 1861 no alterations in fittings or arrangements of compasses, except a vertical magnet applied to starboard steering compass, in July 1862.
WARRIOR	-	-	25 April	1863	Hamoaze:—Deviation and horizontal force observed at standard and steering compasses on various points as ship swinging to tide.
			1 May	"	Deviations observed of all compasses on all points before ship proceeding to sea, after docking and refit.
			28 and 30 December	"	Deviations observed at sea off Madeira on various points, as astronomically determined by master of ship.

WARRIOR— <i>cont^d</i>	June - - - 1864	Plymouth Sound :—Deviations on all points observed by master of ship, as she swung to the winds and tide.
	October - - - „	Portland :—Same observations repeated by master of ship, swinging to the winds and tide. Ship shortly afterwards paid off into ordinary.
WIVERN - - -	15 and 16 June - 1865	At Birkenhead, standard and steering compasses placed :—Preliminary observations for deviation without magnets made, and vertical and horizontal forces determined. Correcting magnets placed to each compass; superintendent of compasses, assisted by Mr. Cairns, who furnished the correcting magnets to the ship.—Deviations obtained on each point after correction, ship being swung by crew preparatory to being navigated to Plymouth.
	10 October - „	Portsmouth :—After docking and thorough refit, deviations of all compasses on all points, determined by master of flag ship.
	6 February - 1866	Portsmouth :—Same observations repeated under same circumstances, before ship proceeding to sea. Horizontal and vertical forces determined at standard compass.
ZEALOUS - - -	22 December - 1865	Devonport. Ship in reserve at moorings :—Deviations of standard compass obtained by master of ship, as ship swinging to tides.
	25 January - 1866	Horizontal and vertical forces observed at standard, steering, and main-deck compasses, on various points, as ship swinging to tide.

In the foregoing statement, all the observations, except where noted to the contrary, were made by the Superintendent of Compasses in the general performance of his duties, with occasionally one assistant.

The time occupied in making a series of observations for each compass, for the deviation, the horizontal and vertical magnetic forces, when ship is on the stocks, in dock, or moored head and stern without swinging, is about one hour, and no manual labour is required. The subsequent computations and graphic constructions, in order to obtain the deviations on all points, and the heeling error, occupy for each compass about two hours.

The time occupied in obtaining a complete set of deviations for all compasses, when hawsers are not employed to swing the ship, varies according to the time of the tides: the set is generally completed in one day, and without the aid of manual labour. A steam-tug is employed at the time of slack water to cant the ship.

When the ship is swung by hawsers, the time of obtaining a complete set of deviations generally occupies from three to four hours, depending on the tides; in this case, from six to ten riggers from the dockyard are employed in addition to the ship's crew.

For a full account of the methods of making the observations, and of deducing the results, reference is made to the "Admiralty Manual for ascertaining and applying the Deviations of the Compass caused by the Iron of a Ship." 2d Edition. London: Potter, 1863; and for an account of the results obtained in armour-plated ships, to a paper in the Philosophical Transactions for 1865, page 268, "On the Magnetic character of the Armour-plated Ships of the Royal Navy, by F. J. Evans, Staff Commander, Royal Navy, F.R.S., and Archibald Smith, Esq., M.A., F.R.S."

Expense attending the operation of Swinging:

On this point I have to observe, that, as the operations necessary are performed by the ship's crew in precisely the same manner that any other evolution is performed on board Her Majesty's ships, such as weighing the anchor, &c., no extra expense is incurred beyond the ordinary pay of the crew, which they would receive under any circumstances.

Under certain conditions, it is stated in the return, that from six to ten of the dockyard riggers are employed in the swinging of a ship, which occupies from three to four hours, but these men are on permanent daily government pay.

Geo. Henry Richards,
Hydrographer.

DEVIATION OF COMPASSES.

R E T U R N

RELATING TO THE

DEVIATION OF COMPASSES.

(Mr. Wyld.)

*Ordered, by The House of Commons, to be Printed,
7 May 1866.*

244.

Under 1 os.

DUBLIN PORT.

RETURN to an Order of the Honourable The House of Commons,
dated 16 February 1866;—for,

RETURN “ of the TOTAL RECEIPTS of the DUBLIN BALLAST CORPORATION for TONNAGE and QUAY WALL DUES levied on all VESSELS entering the PORT of DUBLIN in the Year ending the 31st day of December 1865, and stating separately the Amount of such Dues received from—1. Steam Vessels; 2. Vessels laden with Coals; 3. Vessels laden with Timber; 4. Vessels laden with Corn and other Descriptions of Cargo:”

“ And ACCOUNT of RECEIPTS and DISBURSEMENTS by the CORPORATION for PRESERVING and IMPROVING the PORT of DUBLIN, from the 31st day of December 1864 to the 31st day of December 1865, and of MONIES BORROWED, stating the Annual Amount of Interest payable thereon, and Surplus Receipts above Disbursements, &c. (in continuation of Parliamentary Paper, No. 415, of Session 1865).”

RETURN of the CORPORATION for Preserving and Improving the PORT of DUBLIN.

	Tonnage Dues.	Quay Wall Dues.
	£. s. d.	£. s. d.
1. Steam Vessels - - - - - - -	18,974 12 4	3,162 9 7
2. Vessels laden with Coals - - - - -	8,635 3 11	1,439 4 4
3. Vessels laden with Timber - - - - -	1,324 1 8	1,408 12 4
4. Vessels laden with Corn and other descriptions of Cargo - - - - - - -	4,804 17 2	998 7 10
£.	33,738 15 1	7,008 14 1

Ballast Office, Dublin,
24 March 1866.

A. Tyner, Accountant.
W. Lees, Secretary.

AN ACCOUNT OF RECEIPTS AND DISBURSEMENTS by the CORPORATION for PRESERVING and IMPROVING the PORT of DUBLIN, from the 31st day of December 1864 to the 31st day of December 1865.

R E C E I P T S.			D I S B U R S E M E N T S.			—		
	£.	s. d.		£.	s. d.	£.	s. d.	£. s. d.
Balance, 31 December 1864	-	-	Ballast Office House	-	-	3,393	5 7	-
Reserve Fund	-	-	Ballast Office Loan Debenture, Interest	-	-	3,088	9 10	-
Tonnage Duty	-	-	Harbour	-	-	32,115	3 5	-
" Differences of Dues on Foreign Vessels	-	-	New Basin at North Wall	-	-	17,140	3 11	-
	£. 33,738	15 1	Incidents, Law Costs, &c.	-	-	145	12 8	-
	-	-	Life Boats	-	-	50	-	-
Quay Walls	-	-	Pensions and Charities	-	-	465	3 2	-
Cranes	-	-	Printing and Stationery	-	-	281	13 8	-
Casual Receipts	-	-	Salaries	-	-	3,202	5 5	-
Reserve Fund Dividends	-	-	Superannuations	-	-	920	7 3	-
Mercantile Marine Fund	-	-	North Quay Walls, Sheds and Cranes	-	-	6,421	4 6	-
	-	-	South Quay Walls	-	-	4,365	13 5	-
	-	-	Great North Wall	-	-	85	3 8	-
	-	-	Pigeon House, Road, and Walls	-	-	10	2 -	-
	-	-	Tramways	-	-	1,116	10 -	-
	-	-	Wharves	-	-	184	3 11	-
	-	-	Dublin Port Improvement Bill	-	-	71	7 6	-
Ballast	-	-	Ballast	-	-	5,292	9 10	-
" Differences of Dues on Foreign Vessels	£. 10,408	9 2	Ballast Yard. House and Concerns, City Quay	-	-	95	1 4	-
	771	7 -	Graving Dock	-	-	798	12 11	-
Graving Dock	-	-	Graving Slip	-	-	390	19 6	-
Graving Slip	-	-	Docks at Custom House	-	-	839	13 6	-
Docks at Custom House	-	-	Pilotage	-	-	4,892	2 9	-
Pilotage	-	-	Pilot Service	-	-	1,884	2 9	-
" Difference of Dues on Foreign Vessels	£. 5,498	2 5	Income Tax	-	-	106	13 6	-
	361	18 -	Balbriggan Harbour	-	-	230	18 5	-
Pilot Boats' Earnings	-	-	Rents payable, Lands at Bullock	-	-	477	7 3	-
Income Tax	-	-						88,009 11 8
Balbriggan Harbour	-	-						1,498 12 2
Rents receivable, Lands at Bullock	-	-	Balance due to the Public, 31 December 1865	-	-	-	-	-
	-	-						£.
	-	-						89,508 3 10

Ballast Office, Dublin, 24 March 1866.

W. Lees, Secretary.

A. Tyner,
Accountant.

ACCOUNT of MONIES Borrowed, stating the Annual Amount of INTEREST payable thereon, and SURPLUS RECEIPTS above DISBURSEMENTS.

Monies borrowed by debentures, under the authority of the Act 26 Geo. 3, c. 35, or of any other Act:	£.	s.	d.	£.	s.	d.
Late Irish Currency, £.100 each, British Currency - - - - -	87,876	18	6			
British Currency, £.100 each - - - - -	20,000	-	-			
				107,876	18	6
What part of the same has been paid off:						
To 31 December 1859 - - - - -	22,323	1	7			
To 31 December 1860 - - - - -	3,000	-	-			
To 31 December 1861 - - - - -	676	18	5			
To 31 December 1862 - - - - -	830	15	6			
To 31 December 1863 - - - - -	—					
To 31 December 1864 - - - - -	1,107	14	-			
				27,938	9	6
Existing Debenture Debt, 31st December 1865 - - - £.				79,938	9	-
Annual amount of Interest payable on existing Debt - - -				£. 3,197	10	9
The Corporation have power to issue Debentures to the further amount of - - - - -				£. 30,000	-	-

STATEMENT of SURPLUS RECEIPTS above DISBURSEMENTS.

					Receipts.			Disbursements.		
					£.	s.	d.	£.	s.	d.
1859	-	-	-	-	53,594	18	3	49,579	18	8
1860	-	-	-	-	53,743	7	10	50,486	5	1
1861	-	-	-	-	59,600	15	7	59,354	3	7
1862	-	-	-	-	64,992	15	9	55,794	19	1
1863	-	-	-	-	60,277	7	8	55,516	4	8
1864	-	-	-	-	57,068	12	1	58,909	11	5
1865	-	-	-	-	63,287	6	1	88,009	11	8

DUBLIN PORT.

RETURN of the Total Receipts of the DUBLIN BAL-
LAST CORPORATION for TONNAGE and QUAY WALL
DUES in the Year ending 31 December 1865; and,
ACCOUNT of RECEIPTS and DISBURSEMENTS by the
CORPORATION for PRESERVING and IMPROVING the
PORT of DUBLIN, from 31 December 1864 to 31
December 1865, and of MONIES BORROWED, stating
the Annual Amount of Interest payable thereon, and
Surplus Receipts above Disbursements; &c.

(*Mr. George.*)

*Ordered, by The House of Commons, to be Printed,
11 April 1866.*

THE "DUNCAN DUNBAR" AND "BARBADIENNE."

RETURN to an Order of the Honourable The House of Commons,
dated 8 February 1866;—for,

COPY " of the MINUTES of the EVIDENCE taken and the REPORT made to
the Board of Trade upon the Loss of the ' DUNCAN DUNBAR,' and of
any CORRESPONDENCE with the Board of Trade consequent thereon :"

" And, the same on the Loss of the ' BARBADIENNE.' "

Board of Trade, }
February 1866. }

T. H. FARRER.

(*Mr. Henley.*)

Ordered, by The House of Commons, to be Printed,
19 February 1866.

LIST OF PAPERS.

I.—THE “DUNCAN DUNBAR.”

No.			Page.
1	4 December 1865 - -	Report of Solicitor of Customs - - -	3
2	„ „ „ - -	Observations of the Nautical Assessors -	3
3	7 „ „ (4226)	Report of Official Inquiry and Minutes of Evidence.	4
4	8 „ „ - -	Board of Trade to Mr. Traill - - -	18
5	13 „ „ - -	Board of Trade to Admiralty - - -	18
6	18 „ „ (4375)	Admiralty to Board of Trade - - -	18
7	21 „ „ - -	Board of Trade to Mr. Traill - - -	19
8	9 February 1866 (4375)	Board of Trade to Admiralty - - -	20
9	12 „ „ - -	Admiralty to Board of Trade, and Notice to Mariners, concerning Currents in the Atlantic near the Equator, therein referred to.	20

II.—THE “BARBADIAN.”

1	21 December 1865 (4422)	Mr Raffles to Board of Trade, forwarding Report of Official Inquiry.	23
2	22 „ „ - -	Board of Trade to Mr. Raffles - - -	25
3	27 „ „ (4489)	Mr. Roberts to Board of Trade, with Minutes of Evidence.	25
4	28 „ „ - -	Board of Trade to Mr. Raffles - - -	30

COPY of the MINUTES of the EVIDENCE taken and the REPORT made to the Board of Trade upon the LOSS of the "DUNCAN DUNBAR," and of CORRESPONDENCE with the Board of Trade consequent thereon; and, the same on the LOSS of the "BARBADIAN."

— I. —

LOSS OF THE "DUNCAN DUNBAR."

— No. 1. —

(3841.)

REPORT of SOLICITOR of CUSTOMS.

Customs, 4 December 1865.

I BEG to report that the inquiry directed by the above minute was held at Greenwich. Mr. Traill presided; and Captain Baker and Captain Hunter acted as Nautical Assessors.

The hearing commenced on the 30th ultimo, and terminated on the 1st instant, and the case was conducted by Mr. O'Dowd.

The Court, on the conclusion of the investigation, returned the master's certificate with an admonition. A report will be forwarded as usual.

To the Marine Secretary, Board of Trade. (signed) *W. Gardner,*
for Solicitor, Customs.

— No. 2. —

(664.)

OBSERVATIONS OF THE NAUTICAL ASSESSORS.

THE following observations were made publicly by the assessors in open Court when Captain Swanson's certificate was returned to him.

By Captain *Baker*.] "The Court having returned Captain Swanson's certificate to him, I feel it my duty to make a few remarks before we adjourn.

"In my opinion it is imprudent on all occasions to approach a danger, in the night, upon any supposition whatever.

"On this occasion, I think that afternoon sights should have been taken, when the true course the ship had made since the forenoon sights, could have been ascertained correctly.

"This not having been done, it would have been more judicious had Captain Swanson tacked the 'Duncan Dunbar' at dusk, not having made out the island before that time."

By Captain *Hunter*.] "Or to have kept his ship away to the westward for an hour, or more, to make certain of passing clear of the Las Roccas to leeward."

(4266.)

REPORT OF OFFICIAL INQUIRY and MINUTES OF EVIDENCE.

Greenwich Police Court,
7 December 1865.

My Lords,

I HAVE the honour to report for your Lordships' information the proceedings on the inquiry made by me, assisted by Captains Baker and Hunter, as Nautical Assessors, into the loss of the ship "Duncan Dunbar," on the evening of the 7th of October last, on the reef Las Roccas, off the coast of Brazil.

The "Duncan Dunbar" was a timber-built ship of 1,374 tons register, built at Sunderland in 1857, owned by Messrs. Gellatly, Hankey & Sewell; 4-64ths share belonging to the master, Mr. James Banks Swanson, who holds a Board of Trade certificate of competency as master, dated 6th July 1852. She had a crew of 59, all told, and was bound for Sydney with a general cargo and 58 passengers, chiefly cabin passengers. She was a fine ship of her class, and was fitted out in the most complete manner, both for safety and comfort. The master is represented to be a very skilful and attentive seaman.

The "Duncan Dunbar" left London on the 28th of August, Plymouth on the 2d of September, and crossed the Equator on the morning of the 6th of October, in longitude $30^{\circ} 40'$ west. The master states "he was aware he was far to the westward, but as shipmasters are recommended at the present day by high authorities, including Lieut. Maury, when driven to the westward, to stand on and not to tack," he determined to do so. He adds, "he had no doubt of weathering Cape San Roque, and that he could more easily make his easting there than in the variables on the other side of the Equator."

At noon of the 7th of October an observation gave the latitude, $2^{\circ} 56'$ S. longitude $33^{\circ} 10'$ W., as appears by the log, or as stated by the master, "Latitude, $2^{\circ} 59'$ S., and longitude $33^{\circ} 12'$ W., Las Roccas bearing on his chart (Nories), S. S. W. $\frac{1}{2}$ W., distant 65 miles; and that by the course they were then making from S. W. $\frac{1}{2}$ S., to S. W. by S., he expected to pass at least 10 miles to the westward, and that without allowing for currents, which at noon this day had set the ship to the westward at the rate of two miles per hour for the last 24 hours; and that from the strong W. N. W. current he had experienced for the last 24 hours he expected to pass 26 miles to the westward of Las Roccas."

"At 6 p.m. of the 7th, he worked up the reckoning from noon, and found Las Roccas bearing S. $\frac{1}{4}$ E., distant 20 miles, allowing for a knot and a half of current, and the usual (half a point) lee way. At 7 p.m., for greater caution, he sent the second officer and an A. B. seaman up to the foretopsail yard to look out; and at 8 p.m. the first officer was ordered to relieve the second officer on the foretopsail yard, and he took the charge of the deck himself."

These precautions seem very commendable; indeed the great caution of sending his first and second officers aloft to look out, might seem to imply a greater degree of apprehension than the master entertained. As this, however, was the first time he had gone outward bound to the west of Las Roccas, this vigilance ought to be taken much in his favour.

It appears by the evidence of the second officer, "that just before his time of relief he remarked a curious appearance of the water on the port bow; it was such an appearance as might be shown on the water by a star, and appeared to be four or five miles off; and Andrews, the relief man, just then stepping on to the yard, instead of reporting this in the usual way from aloft, he thought he had time to go down and report it to the captain; and on his way he met the chief officer on the main deck, and said to him, 'Bear a hand aloft, the water looks curious;' that he went straight to the poop where the captain was and told him the water looked curious. He said, 'Does it; where?' and leaned over the rail on the port side. At that moment the chief mate sung out from aloft, 'Breakers! land, ho!' This was not more than three or four minutes from the time of his leaving the topsail yard, that he looked over the rail with the captain, but could not see breakers."

The first officer states that on reaching the topsail yard, which he did in not more than a minute after meeting the second officer on the main deck, he immediately saw the broken water at 100 yards from the port bow. This extraordinary discrepancy between the observation of the first and second officers is endeavoured to

to be explained by the supposition that the appearance described by the second officer was the surf on the rocks on the weather side of the island, four or five miles to the eastward, and could not be the same that were seen by the first officer on his reaching the top.

The first officer, however, states that the broken water he saw might, he thinks, have been observed two miles off from the topsail yard. Immediately on hearing the alarm given of breakers ahead, the master ordered the helm to be put up, but the ship took the ground in the act of paying off. Ineffectual attempts were made to back her off when she first struck, and subsequently to float her off, by throwing cargo overboard, but before next flood she had filled with water and canted over, and eventually became a complete wreck, and nothing of value of the cargo, with the exception of the specie, was saved.

This is a summary of the facts up to the ship's taking the ground. The subsequent particulars are fully detailed in the evidence accompanying this report, and afford proof of the zealous and judicious conduct of the master in safely landing his passengers, and his prompt measures to relieve them from their perilous and painful situation; and it also exhibits in the most favourable light the conduct of the passengers, many of them delicate females, who bore with the greatest patience and fortitude their sufferings, during their detention of 10 days on this desolate reef.

In the endeavour to account for the loss of the "Duncan Dunbar" under the circumstances above stated, the first impression is that there must have been some considerable error in reckoning. As no land was sighted after leaving Plymouth, and there was no opportunity of testing the chronometers, the error might have been in them. The master, however, states that he found them correct upon subsequent examination at Pernambuco.

The explanation given on behalf of the master is to be found in the evidence of Captain Trivett, and more particularly in that of Captain Selwyn, of the Royal Navy, who states "that when surveying the Roccas Shoal in the 'Siren' in 1857, instead of the strong westerly currents, as described in the charts and books of sailing directions, he found a strong current in a southerly direction, with a tendency towards the east; that in his opinion the 'Duncan Dunbar' coming from the north-east would first come in contact with this current when 16 or 20 miles from the island, up to which point the current would be purely westerly, and that the southerly and easterly current he refers to, would account for the ship being so far to the eastward of her reckoning."

He adds, "that looking at the position of the ship at noon of the 7th of October, and the knowledge possessed by the Captain, assuming, as he had a right to do, the existence of a westerly current, he considered the course taken by the Captain a prudent one, and such as he himself would have taken, had he not been aware of the south-easterly set, as stated." The same opinion is expressed by Captain Trivett; and the existence of a south-easterly current in the immediate vicinity of the Roccas, and between it and the Brazilian coast, is confirmed by the observation of the officers of the ship while on the reef, and by the master in his passage to Pernambuco in the life-boat. The deceptive nature of these currents, varying as they probably do at different periods of the year, and the low-lying level of the reef, render the Roccas a great danger and obstacle to the adoption of this route, which in other respects is thought by many to offer great advantages to ships bound for the Southern Hemisphere. And it seems to be a matter of great importance for your Lordships' consideration as to the necessity of erecting a lighthouse on this island, as suggested by Captain Selwyn in the note annexed to his evidence. The cost would be as nothing when set against the numerous wrecks of which there are traces on the reef. The value of such a ship as the "Duncan Dunbar" and her cargo, would alone amount to a sum sufficient to defray the expense of erection and probably also the maintenance of such a light. Till this is done it is to be hoped that the loss of this ship will operate as a caution to those using the Roccas route, and lead them to exercise the utmost vigilance when approaching, or attempting to pass the parallel of these dangerous rocks, in the night or in thick weather.

The necessity of this precaution in future was impressed upon Captain Swanson by the court, as well as the advisability of taking sights as often as practicable to ascertain which way the current is setting.

Under the circumstances in which Captain Swanson was placed the loss of the

"Duncan Dunbar" has not been considered to have been caused by a default on his part, and his certificate has been restored to him.

The strong testimony to his character as an able and careful officer appears in the evidence accompanying this report.

I have &c.
(signed) *James Traill*,
Stipendiary Magistrate.

We concur in the above Report.

R. B. Baker,
Robert L. Hunter, } Nautical Assessors.

The Lords of the
Committee of Privy Council for Trade,
&c. &c. &c.

Greenwich Police Court, 30 November 1865.

MINUTES OF EVIDENCE.

INQUIRY into the Circumstances attending the Loss of the Ship "Duncan Dunbar," on the Evening of the 7th of October 1865, on the Reef Las Roccas, off the Coast of Brazil, made by direction of the Board of Trade by James Traill, Esq., Stipendiary Magistrate, assisted by Captains Baker and Hunter, acting as Assessors.

GEORGE COOKE, upon his oath, saith:—

I RESIDE at Brunswick-terrace, Blackwall. I hold a certificate of competency from the Board of Trade, as first mate, dated 6th July 1865, under the "Merchant Shipping Act," previous to which I held a certificate as second mate for four years. This was my first voyage as chief officer; I have been two years second officer, and one year as third officer in the same ship, "Duncan Dunbar." The "Duncan Dunbar" left London on 28th August last, on a voyage to Sydney, New South Wales. She called at Plymouth to embark passengers. She carried a general cargo; a full cargo. She had about 50 passengers; between 50 and 60; principally saloon passengers; about 13 in the steerage, some of whom joined the ship in London, the others at Plymouth; there were several ladies, nurses, and children. Nothing occurred of any consequence on the voyage till we crossed the line. We had southerly and S. S. E. winds. When on the line, or a little before we crossed the line, we tacked several times. On October 4th we tacked ship, also on the 3d, and also on the 2d. We first tacked ship on the 2d. I see that we tacked ship on the 30th of September, to the eastward. Latitude at that time was 6° 38' N., Longitude, 27° 29' West.

We had wind from S. on 1st October. I produce the log book of the voyage; it is in my handwriting, the whole of it. At noon of the 7th of October, the latitude was 2° 56' S.; longitude, 33°, 10 miles west.

Under date of 6th of October, the entry was made on that day; the entry originally was S. E.; it was altered afterwards, S. E. by S.

The entry of the course on that day originally stood S. S. W., and altered at the same time to S. W. by S.; it was altered momentarily by myself. The second officer was present when I made the alteration.

The entries on the log slate were made by myself. This entry was not made in the log book till we were ashore; the log slate was lost. We clewed the main royal up at one o'clock, p.m. of the 7th October; there was a good sharp breeze, and the ship was close hauled. The wind was S. by E.; the log book states the wind to be S. E. by S.; that is wrong.

On the evening of the 7th of October my watch was from five to six. I was constantly on deck from noon of that day till six o'clock. At five o'clock the wind was S. E. by S., the ship going about seven knots; she was then steering a S. W. course; the captain was then on deck. At six o'clock, or a little before, she fell off a little, about half a point; she came up again almost instantaneously, and we kept her on the same course. It was then about sunset. At six o'clock a man was sent up to the foretopsail yard, looking out for the "Roccas," in case we should be near it. It was not because we expected to be near it. I had made up the dead reckoning at six o'clock, and I expected myself we were to the westward of the "Roccas." The "Roccas" is 128 miles from the coast. At six o'clock, I believe, it was about dusk, the second officer was sent aloft by the master; he was to have remained aloft till such time that I relieved him; my watch commenced at 8 p.m. After I had stationed my watch, I went by direction of the master aloft, about 10 minutes

minutes or a quarter-past eight, to relieve the second officer; I met him on the main deck as I was going up to relieve him; he said there was curious looking water ahead; he was running at the time to report it to the captain. I then went aloft and noticed breakers ahead, and I immediately called out "Breakers ahead; land, ho!" I met the man Andrews over the top just as he was coming down, and he said, "curious stuff," or "curious water." I saw the breakers at once, close to the ship, not more than 100 yards off. She took just the outside of the reef, the extreme end of it. No cast of the lead was taken; before I could get down the ship was aground; she was going about seven knots at the time. On referring to the chart produced, the ship struck on the N. W. portion of the reef, and to the northward of the beacon. I observe that there are soundings in 15 fathoms upon this chart. No soundings were marked on my chart. We could not have taken soundings without heaving the ship-to. After she had struck, which was about a quarter-past eight, we placed the yards round on the other tack, and hauled the mizen out, to cant her clear of a shoal-breaker astern.

She flew off three or four points before she struck, and brought her head to wind. I am quite sure the helm was put up when I sung out.

The tide was at high water when she went on the reef. When the tide began to ebb we clewed up all sail, and cut away the foretop gallant mast; and, while I was getting the sails up, the captain took the cutter and took soundings, to see how the ship stood on the rocks.

I took soundings myself from the ship; there was a quarter less three fathoms, on the starboard side, in the mizen chains.

The master took the lead from my hand, and took soundings himself; there was no attempt made to land the passengers that night; they behaved quietly; there was very little surf. We threw over some of the cargo, thinking that at the next tide we might get the ship off. She did not make water till about 10 or 11 o'clock that night; both pumps were worked by the stewards, cooks, and passengers. We commenced to throw the cargo overboard about 10 o'clock that night (7th October), after the captain had been round in the cutter, and continued to do so during the night. We did not get any anchor out; we had a kedge ready in the fore chains in case we needed it. The water was smooth; there was no sea on particularly then.

The weather was not so bad but that we could have sent the kedge out in the long boat. On the following morning, at dawn of day, when it was very nearly high water, the captain took the cutter and returned in a quarter of an hour; he had previously given me orders to rig a chair for the ladies. When he returned the life boats were lowered, and two or three men put into each; the second and third officers attended to them, and we succeeded in landing all the passengers safely. We had five boats altogether, a gig, a cutter, two life boats, and a long boat. Having rigged the chair, a greater part of the ladies went in the first life boat, and all the passengers were landed by seven o'clock on that morning; we then got water and provisions on shore for them. We rigged a tent on that day on the highest point of the island, called the Sand Island, near the beacon, which accommodated all the chief cabin passengers; there was no water on the island. The captain and boatswain remained alone on the ship during the whole of the night of the 8th. All hopes of saving her were then gone, as the water was then up to her deck beams.

After leaving Plymouth we did not see land, so that we had no opportunity of ascertaining the accuracy of our chronometers. We had three on board; they did not correspond; they corresponded according to the rates given by the makers.

According to my dead reckoning of her course between six and eight on the 7th, she should have been 14 miles to the westward of La Roccas.

On the morning of the 9th I went to the wreck at daylight in the cutter; the life boats followed; the captain left the wreck to take a cask of water, containing 160 gallons, ashore. We got a further supply, and wine and beer on that day; also a tank; we got another tank of water on the 10th; also some passengers' baggage was landed.

The passengers behaved very well; the captain took a boat to go to Pernambuco, with six hands, leaving me and four gentlemen in charge of the island. He sent a steamer on the 17th October, and she took off all hands from the island.

There were the remains of a rude beacon on the island where we pitched our tents. We arrived at Southampton on 4th November.

By Captain Baker.] This was my fifth voyage to Sydney; twice as a second officer in the "Duncan Dunbar;" one voyage also as third officer. As second officer I worked the ship's reckoning daily with the captain. We never went so far westward to the island before; but I have sighted "Fernando" twice in the same ship.

I have found a difference between the course steered and the dead reckoning. I don't know what the difference was, but it was to the westward. We saved the chronometers; they were correct. I allowed two knots an hour for westerly current and lee way.

When I went aloft on the night of the 7th, he told me to look for the broken water. I did not expect to see it; I thought we were to the leeward of it.

There was a difference of a point between the compasses; we steered by the one at the break of the poop. I had no reason to doubt the accuracy of the compasses. We threw a great deal of cargo overboard on the night of the 7th; they were heavy bales of goods, and that lightened the ship about 10 inches. I had given up all hopes of saving the ship on the night of the 8th. The boats were all well fitted and found.

Had the second officer sung out when he first saw the danger, and the helm had been put down, I think the ship would have cleared the rock. Had the helm been put up or

down at that time she might have cleared the rock. There was a look-out man on the fore-castle.

By Mr. *Cottingham* [who appeared as Counsel for the Master.] At noon of the 7th October our position was same that appears in the log-book. I allowed half a point an hour for lee way, and $1\frac{1}{2}$ miles an hour for currents. According to that calculation we should have been 17 miles to the westward of Roccas, at eight o'clock. I never heard of an eastern or southerly current in that latitude. I observed that the cargo, when thrown over-board, floated in a southerly direction, whether the tide was flowing or ebbing.

The ship was ready to go about at six o'clock, p.m. of the 7th, but I did not hear the captain express any intention of going about; my conviction is that the captain did not intend to go about.

At the time when an anchor would have been of any service, the ship was making water. I had no reason to believe that the chronometers were incorrect. I always agreed with the position of the ship with the captain daily at 12; and the position of the ship, on the day of the wreck, at 12, was compared by us. I took the sun at noon of that day.

On the 4th of October the dead reckoning was not inserted in the log. I brought the dead reckoning to the captain on that day, at 12 o'clock. We were on the reef 10 days. The captain himself suggested that he should go to Pernambuco. The captain also suggested that four gentlemen should be named to look after the stores during his absence; that was a good arrangement. The captain was the first person to find an entrance to the reef; the last man to leave the ship was the captain. The captain left the wreck at dark on the night of Tuesday the 10th of October; she was then full of water, her lower decks up, burst up with the water and cargo. The saloon also was full of water; all the lee cabins were full of water, and she might have broken up any moment. It is my opinion that the captain did all that could be done to save the property.

On the night of the wreck, it was a clear night, the moon had not got up. The breakers that I saw were not heavy, only light foam. I did not hear any one, either second officer or Andrews, call out, "Breakers a-head;" they might have been seen a couple of miles off. At 6 p.m., when I was relieved by the second officer, I told him we should pass the "Roccas" about eight o'clock.

The ship was well found in every respect, and a perfect crew. No sights were taken on the afternoon of the 7th October, that I am aware of.

Geo. Cooke.

The within deposition of the said George Cooke was taken upon oath before me, at the Police Court, Greenwich, within the Metropolitan Police District, this 30th day of November 1865.

James Traill, Stipendiary Magistrate.

Greenwich Police Court, 1 December 1865.

The said GEORGE COOKE, upon his oath, further saith:—

THE alteration in the log book of the wind at noon of the 7th of October, was made on the reef seven days after the wreck. The log slate had been lost, and the entries were made from memory. I consulted the second officer: I made that alteration, believing it to be a true statement. I put down S.S.W. first; the second officer said that was too good a course, and I altered it at once to S.W. by S.

Geo. Cooke.

The within deposition of the said George Cooke was taken upon oath before me, at the Greenwich Police Court, within the Metropolitan Police District, this 1st day of December, 1865.

James Traill, Stipendiary Magistrate.

Greenwich Police Court, 1 December 1865.

JOHN CHARLES ROBINSON, upon his oath, saith:—

I LIVE at No. 15, Harrup-street, Poplar. I hold a certificate of competency from the Board of Trade, as second mate, bearing date the 30th August 1864. I was second officer on board the ship "Duncan Dunbar" on the last voyage. That was my first voyage in that ship to Sydney. I have made six voyages to New South Wales, in different vessels belonging to the same owners. I have been at sea five years and a few months—two or three months. On the 7th of October last, my watch on board the "Duncan Dunbar" was from 12 till 5. At 1 o'clock on that day the ship's latitude was $25^{\circ} 6' S.$ and $33^{\circ} 10' W.$; that was the position of the ship at 12 o'clock; the wind was about S.S.E. She was then going at a speed of eight knots. She was heading S.W. by S. We had all plain sail set, except the royals. She was close hauled to the wind at that time; the wind was S.S.E., or S.E. by S. Nothing particular occurred during that watch. At 5 p.m. I went below, and came up again at six, my watch being from six till eight. The ship was heading at six o'clock about south west. She broke off just before six, Mr. Cooke told me, and she came up again. The ropes had been put down to bring her about at six o'clock, in consequence of her having broken off. She came up to S.W.

A man

A man named Findlater was sent aloft about half-past six. It began to get dark at seven o'clock. Shortly after half-past six I sent Mr. Darley, the fourth mate, aloft to look round and see if the man was keeping a good look-out. At seven o'clock, the captain sent me up to keep a look-out for breakers; it was just beginning to get dark. About half-past seven I observed to Findlater that the water was in a fiery state, and that we should be able to see breakers at a great distance off. About five minutes after eight I said to him, "There's nothing in sight, is there?" He said, "No, sir." I said, "You can go down and send your relief up;" and he went down, and in about five minutes afterwards, which would be about ten minutes past eight, I observed a peculiar appearance in the water on the port bow; I was then aloft alone. The peculiar appearance was, such a light that might be shed on the water by a star, and appeared to be four or five miles off. I turned round, and should have called out, but Andrews at that moment stepped on to the yard, so, instead of calling out and answering the distance, I thought it better to go down. I pointed out to Andrews, over the port bow, that the water had a curious appearance. I told Andrews to keep a sharp look-out while I went down to report it to the captain. I passed the chief mate on the main deck, and said, "Bear a hand aloft, the water looks curious:" he was going up then to relieve me. I went straight on to the poop where the captain was, and told him that the water looks curious over there, pointing over the port bow. Captain Swanson said, "Does it; where?" and leaned over the rail on the port side. At that moment the chief mate sung out from aloft, "Breakers ahead: land ho!" That was not more than three or four minutes from the time I left the foretop. The captain directly ordered the helm to be put hard-a-port. I looked over the rail with the captain, but could not see any breakers; the helm was put hard-a-port; she paid off two or three points, and while paying off she struck.

I saw the breakers as she was paying off.

I thought we were well clear of Las Roccas by the dead reckoning; when I went aloft, the captain told me to keep a look-out, I think he said for breakers. The day before, according to my sights, we had set about 10 miles to the west, which sights were wrong by Mr. Cooke's reckoning. Andrews said nothing to me about breakers ahead; he said the water looked curious. I did not think myself that what I saw were breakers. The ship was going along smoothly at the time; she was sailing by the wind; there was no sea on, comparatively. The order was given to sail the ship by the wind, and she was sailed by the wind all that day.

She began to leak a little about 11 o'clock on the night of the wreck, and by the following morning she had nearly filled.

The moon rose about 10 o'clock I worked the time up to 12 at noon of the 7th October, and compared it with Mr. Cooke, and there was a difference of two miles in longitude.

The chief officer told me at six o'clock, that she was prepared to go about, as she had fallen off her course but had come up again.

The ship could not have gone more than half-a-mile from the time of my leaving the foretop and her striking.

By Mr. Cottingham.] The "Duncan Dunbar" generally made half a point leeway on the wind. I am quite satisfied that her position at 12 at noon of the 7th October was 25° S. and $33^{\circ} 10'$ W. We got a sight of the sun at 12 o'clock on that day, and other sights in the morning. On working those observations, after she had struck, I made the position of the ship to be at six o'clock N. and W. of the island, and 19 or 20 miles off, the island bearing S. $\frac{1}{2}$ E. I allowed for leeway and current; I had reason to know that there was a current setting to the west.

At six o'clock every thing was clear to go about; it was a general order for me to go round and see all clear, not particular to that day at all. I found all clear when I came up, at five minutes past six. It was at seven o'clock that I received orders from the captain to go aloft; that was about an hour and a quarter before she struck; the appearance that I saw, like a star shining on the water, was full on the port bow, from four to five miles off, and my impression is, that I saw over the reef and saw the broken water on the weather side. When we were ashore, the water around the reef had a greyish appearance; there were no high breakers. When she was ashore, I noticed the breakers along the port side; not high breakers, but broken water. I could not see those from the deck.

When I saw this appearance, as I have stated, I did not think it was breakers. I thought the best mode was to come down and report what I saw, as there was a man in the yards. I did not think it was broken water; it was an undefined affair. I thought it was a star shining on the water. I did not think that I was disobeying the captain's order by coming down, and not singing out. The captain did not give me an order to sing out. I met the chief mate on the main deck; I went and reported what I had seen to the captain on the weather side of the poop. I had no idea when I made the report to the captain that we were so near the breakers. The captain seemed surprised, and said, "Is there; where?" and looked over the rails. I remained on the reef till the "Oneida" came up, and took us all off. After she had struck, and she was fast, the captain went away about nine o'clock in a boat, and returned about 10 or 11 o'clock the same night; he had a lead line with the boat; on the following Wednesday the captain left, in a boat, for Pernambuco; he made every arrangement before he left for the comfort of the passengers.

A great deal of cargo was thrown overboard; some floated away, and some sank; that that floated went round the west side of the island to the southward. I saw lots of things float in that direction for two miles for several days. The currents all went in the same direction.

PAPERS RELATING TO THE LOSS OF

By Captain *Baker*.] No sight was taken in the afternoon of the seventh, that I am aware of.

By Mr. *Traill*.] The first officer told me that the ship was prepared to go about.

J. C. Robinson.

The within deposition of the said John Charles Robinson was taken upon oath before me, at the Police Court, Greenwich, within the Metropolitan Police District, this 1st day of December 1865.

James Traill, Stipendiary Magistrate.

Greenwich Police Court, 1 December 1865.

The within deposition of the said JOHN CHARLES ROBINSON, who further saith :—

I have heard what the chief officer, Mr. Cooke, has stated with reference to the alteration of the course in the log-book of the 7th October, and that statement of the manner and cause of the alteration is true in every particular.

J. C. Robinson.

Sworn before me, at the Greenwich Police Court, within the Metropolitan Police District, this 1st day of December 1865.

James Traill, Stipendiary Magistrate.

Greenwich Police Court, 1 December 1865.

EDMUND MACE, upon his oath, saith :—

I live at No. 17, Lower Merry-street, Bromley, Middlesex. I was quartermaster on board the "Duncan Dunbar" on her last voyage. I remember the 7th of October. I was at the wheel from 6 till 7 o'clock. The course given me was full and bye. She was steering S. W. and by S. southerly, by the binnacle.

I was relieved at 7 o'clock by Hyett, and I gave him the same course, "full and bye." The vessel's speed, as far as I can recollect, was seven knots an hour. My watch was on deck till 8 o'clock. I saw the captain constantly on deck during my watch.

I saw the captain send the second officer aloft at seven o'clock. Before he went up, and before 6 o'clock, everything was ready for tacking. At 8 o'clock I was by the fore-castle. Some seven or eight minutes afterwards, I heard a man named Andrews sing out, "Breakers." He was aloft, about the lower foretop-sail yard. I can't tell whether the second officer was aloft or not. I swear I heard Andrews distinctly call out. I did not hear the mate sing out. I jumped on the fore-castle, and saw breakers; broken water; a mass of broken water. She was not right into them; about a ship's length, or more than that, off.

When the word "Breakers ahead!" was called out, the captain called all hands, and sung out for the lead. I got the lead-lines up. I did not hear what was said about the helm. I got the lead out of the cabin, and she struck before I could get it from the second officer's cabin. I took a cast of the lead on the starboard side mizen chains, and made it a foot less than three fathoms. I think the ship drew 18½ feet forward. After I had taken one cast of the lead, the captain took the lead, and watched it very carefully himself. He watched her very carefully after she had struck.

He gave me orders to clear away the boats, which I did. I lowered the cutter. I accompanied the captain, and he sounded about the ship, and 50 or 100 yards astern he found five fathoms and a half of water. On the Sunday morning I went in the cutter again along the reef, and found a landing-place. On the Wednesday following I accompanied the captain to Pernambuco in the lifeboat. We got about 105 miles, and were picked up by an American barque. We beat up the coast, and she put us out again within 12 or 15 miles of Pernambuco. We left the reef on the Wednesday, and was picked up on the following morning. We arrived in Pernambuco on Sunday morning, and left the following afternoon, on board the "Oneida" steamer, and reached the reef on Tuesday at half-past one. We all returned in the steamer, except the captain, bringing the lifeboat with us. The captain made every arrangement for the safety of the passengers and crew before he left the reef. When we left the reef on the 17th of October, the ship was lying on her side, with her bottom out and masts all out. The specie was saved and brought home.

By Mr. *Cottingham*.] After she had struck, there were heavy breakers on the port side. I saw nothing in the shape of broken water till she struck. The lifeboat that we went to Pernambuco in carried one lugsail. The boat was from 20 to 30 feet in length. We had a nasty sea, and I thought she would fill.

We went from four to five knots when we had the wind. We averaged four knots, and she shipped water.

Edmund Mace.

The within deposition of the said Edmund Mace was taken upon oath before me, at the Greenwich Police Court, within the Metropolitan Police Court, this 1st day of December 1865.

James Traill, Stipendiary Magistrate.

Greenwich Police Court, 1 December 1865.

HENRY HYATT, upon his oath, saith:—

I live at No. 5, Antcliff-street, Commercial-road. I was quartermaster on board the "Duncan Dunbar" on her last voyage.

At seven o'clock on the evening of the 7th of October, I relieved the last witness at the wheel. Her head was S.W. by S. She kept that course for three-quarters of an hour, and then came up to S.S.W. She was steering within seven points of the wind. She remained on that course till I was relieved at eight o'clock, and was going off the poop. I had my grog supplied, and I smelt sea-weed; and in a minute she struck. It was a tropical night. I heard no one sing out "Breakers."

The weather was squally after she had struck.

By Mr. *Cottingham*.] I saw nothing of the shoal till the ship struck. I went with the captain to Pernambuco in the lifeboat. We had to keep her in the wind; she knocked about in a frightful manner, shipping water on all sides. We left the reef at 10 o'clock in the morning of Wednesday, and fell in with the American barque about seven the next morning. I should say she sailed about five knots an hour.

Henry Hyatt.

The within deposition of the said Henry Hyatt was taken upon oath before me, at the Greenwich Police Court aforesaid, within the Metropolitan Police District, this first day of December 1865.

James Traill, Stipendiary Magistrate.

THOMAS COOPER, upon his oath, saith:—

I reside at Hull. I was quartermaster on board the "Duncan Dunbar" on her last voyage. On the night of the 7th of October, I relieved the last witness at the wheel at eight o'clock. He gave me no course; he said, "Full and bye." She was steering S.S.W. I kept her the same course by the steering compass. I saw no broken water while I was at the helm. After I had been at the wheel about five minutes, I heard some one forward, up aloft, sing out "Breakers ahead!" The captain directly ordered me to put the helm hard up, and I did instantly, and she paid off four points to W.S.W., and then struck and stopped. She struck slightly at first, and then very heavily. She did not unship her rudder while I was at the wheel during an hour afterwards. Sometime during the night the rudder was unshipped and the stern-post broken.

Thomas Cooper.

The within deposition of the said Thomas Cooper was taken upon oath before me, at the Greenwich Police Court, within the Metropolitan Police District, this first day of December 1865.

James Traill, Stipendiary Magistrate.

Greenwich Police Court, 1 December 1865.

WILLIAM FINDLATER, upon his oath, saith:—

I live at the Sailors' Home, Wells-street. I was an A. B. on board the ship "Duncan Dunbar" on her last voyage.

On the evening of the 7th of October I was on the look-out with Mr. Robinson, the second officer. I went on the foretopsail yard at six o'clock. Mr. Robinson joined me at seven o'clock, and remained till eight. I did not notice anything at eight. I was looking out for land or rocks; and at eight o'clock Mr. Robinson said, "There's nothing in sight?" I looked round and said, "No;" and he told me to go down and send the next man up. I did so. That man's name was Henry Andrews. I was in the forecastle when she struck. Just before she struck I heard some one call out, "Land ahead!" and I rushed out, and, after she had struck I saw breakers on the port bow.

About half-past seven the water looked fiery ahead all around.

By Mr. *Cottingham*.] Mr. Robinson made the remark to me that the water looked fiery all around, and if there was anything we should be sure to see it. The fiery water seemed to be all around. I can't say the distance.

Wm. Findlater.

The within deposition of the said William Findlater was taken upon oath before me, at the Greenwich Police Court, within the Metropolitan Police District, this first day of December 1865.

James Traill, Stipendiary Magistrate.

Greenwich Police Court, 1 December 1865.

JOHN FREDERICK TRIVETT, upon his oath, saith :—

I reside at Campbell-terrace, Bow-road, Middlesex. I have been 25 years a commander in the merchant service. I was never in Mr. Duncan Dunbar's service. I also hold a commission in the Royal Naval Reserve.

The last seven voyages I made along the South American Coast. I retired in 1861. In the Australian voyages I generally crossed the line between 28° and 31° . My last voyage was $31\frac{1}{2}^{\circ}$. I do not consider that an extreme westerly route. I have been to leeward to Fernando frequently. The "Princess Royal" was the name of the ship in which I crossed the line at $31\frac{1}{2}^{\circ}$ in October 1860. On that occasion I did not see Cape St. Roque; I never saw Cape St. Roque. I have passed to the westward of Fernando. I have generally found the wind more to the eastward as you approach the Brazil coast. I have heard the evidence given in this case, and the courses steered for passing Las Roccas, and I considered them to have been safe courses according to the information that the captain possessed. I passed Las Roccas on my last voyage home 15 miles to leeward, at eight o'clock at night.

Undoubtedly I should have stood on as Captain Swanson did on that night, looking at all the circumstances.

Thousands of ships, within my knowledge, have adopted this course. The disadvantages by the eastern route are a continuation of calms, rains, and squalls, and frequent sickness. I have experienced the westerly current in that position. I have had it two knots an hour at times. As you approach Cape St. Roque, the current divides itself, and takes a southerly direction.

J. F. Trivett.

The within deposition of the said John Frederick Trivett was taken upon oath before me, at the Police Court aforesaid, within the Metropolitan Police District, this 1st day of December 1865.

James Traill, Stipendiary Magistrate.

Greenwich Police Court, 2 December 1865.

JASPER HENRY SELWYN, upon his oath, saith :—

I am a captain in the Royal Navy. I have been many years in the service, and for many years was employed in surveying ships under Sir Edward Belcher. I am intimately acquainted with the Roccas Shoals. I visited them in 1857 in Her Majesty's brig "Syren." I made a survey of that reef on that occasion. I produce a tracing of that chart then made by myself. I found a remarkable difference both in latitude and longitude in the charts laid down up to that period, and I turned my attention particularly to that point. By my series of observations, I found the latitude to be $3^{\circ} 51'$ and $30''$ south; longitude, $33^{\circ} 50' 9''$ west.

I found a difference, a considerable difference; I cannot say what, from memory, but sufficient to draw my attention, especially in the longitude.

I sounded on the north side of the island principally, extending round as far as N.W., including the quadrant between N.W. and E.N.E. At a mile and a half distant, on the northern side, no bottom could be found at 30 fathoms. There are soundings on the south-eastern side of the island, extending five miles from the reef. I observed the currents in that particular longitude.

In making this survey, I examined the books usually found on board a man-of-war, describing the currents. I found them described as strong westerly currents. I tested the truth of this description myself, and established the opposite fact. The current, instead of setting to the westward during the month of November that I was there, set strongly to the southward in the immediate vicinity of the rock. I tested it in going to and from the rock; I tested it from 10 or 15 miles north and west of the island, and found it took a southerly direction, with a tendency towards the east. While surveying the Roccas at low water, and only at low water, or from that to half tide, I remarked a break of the sea. This was examined, and carefully laid down in the chart, proving to be a rock lying at a distance of about a quarter of a mile from the main reef, to the northward. The island was covered with wreck when I was there, and wreck that could not have drifted there, besides chains and anchors. I have heard the evidence in this case. Looking at the position of the ship at 12 o'clock at noon of the 7th of October, and the knowledge possessed by the captain, assuming the existence of a westerly current, which I consider Captain Swanson was justified in assuming, I consider the course taken by the captain to have been a prudent course, such as I should myself have taken, had I not been aware of the south-easterly set, as I have stated.

The ship at eight o'clock on the evening of the 7th of October ought to have been, according to my calculation of the courses stated by the witnesses, to have been steered, $14\frac{1}{2}$ miles north and west of the island. S. 60 E. would be the bearing of the island, according to the

the latitude and longitude that Captain Swanson was acquainted with. I should have stood on after dark exactly as he did. What the second officer has stated he saw between four and five miles off just before the ship struck, I have no doubt were the breakers on the weather side of the island, five or six miles off; and I am of opinion that the broken water stated to have been seen directly afterwards by the first officer was not the breakers seen by the second officer. It is not the general practice to take afternoon sights on board merchant ships. If Captain Swanson had taken sights at half-past three on the afternoon of the 7th of October, I do not believe that it would have been of any service to him; on the contrary, it would have confirmed him in his error of a westerly current, which was marked in his chart.

I have acted as a member of several courts martial in Her Majesty's Navy.

It is the invariable practice in the Royal Navy to exonerate commanders who have lost their ships, if it can be proved that the loss was attributable solely to conflicting currents.

Several casualties have occurred on Las Roccas. During the time I was on the island I caused a beacon to be set up, composed of ships' spars firmly bolted together, but this, of course, had not lasted long. Since the Las Roccas route has now been adopted, what is required is an iron lighthouse, which is easy of transportation, and, in the erection of which no engineering difficulties present themselves. The currents are so variable in the vicinity of this island that a lighthouse is imperatively necessary.

I am of opinion that the "Duncan Dunbar," in the direction that she came from the north-east, would first come in contact with the southerly current when 16 or 20 miles from the island; up to that point the current would be purely westerly. The sailing directions at present published give the Roccas themselves as lying in a westerly current.

J. H. Selwyn.

The within deposition of the said Jasper Henry Selwyn was taken, upon oath, before me, at the Police Court aforesaid, within the Metropolitan Police District, this 2d day of December 1865.

James Traill, Stipendary Magistrate.

Further observations of Captain Selwyn's, marked (A), and annexed hereto.

(A.)

OBSERVATIONS of the Witness, Captain *Selwyn*.

London, December 1865.

HAVING been called as a witness on an inquiry, instituted under the Board of Trade, into the causes of the wreck of the "Duncan Dunbar," passenger ship, on her voyage to Australia, and having been requested by the court to furnish a statement of my opinion as to the island called Las Roccas, off the Coast of Brazil, on which the ship was lost, I have the honour to do so as follows:—

In consequence mainly of the researches of Commander Maury, a new route to India, China, and Australia, or the Pacific, has been very generally adopted, and always with great effect in shortening the voyage. This leads ships to cross the Equator very much to the westward of the meridian of longitude formerly held to be the best for that purpose. The doing so, however, will often involve the necessity of passing much nearer to the coast of Brazil on the latitude of Fernando Noronha than would be the case if at liberty to steer a course instead of sailing by the wind, after crossing the line; so long as the ship looks up for Cape San Roque, it is not desirable to go about, for when the space of open water between Las Roccas and the main land is reached, the wind draws to the eastward, and a southerly current also aiding, the ship is enabled to clear the coast of Brazil in most instances without going about. Thus it happens that Las Roccas lies directly in the best track for commerce, whether from Great Britain or the United States, for China, Australia, India, or the Pacific, and no greater boon could be granted to those who are interested in, or navigate the vessels engaged in that commerce, than a lighthouse, for which they might confidently be steered, and whose position would be accurately known; on the now dangerous reef of Las Roccas. Such a lighthouse could be built of iron, sent out in parts; a firm foundation would be obtained on the coral rock, but probably screw piles would be even better if forced through the sand to a sufficient depth, and profitable occupation could be given to the lighthouse keeper in catching and curing the fish which abound in the vicinity. Fernando Noronha, though offering many more facilities for the establishment of a lighthouse, as regards the island, is not so placed as to be of equal value with Las Roccas. Near Fernando Noronha there is neither to be found the favouring southerly current nor the slants of wind which, between Las Roccas and the main land, so materially aid an outward bound ship, and I do not hesitate to say that there will be rarely any other track followed if the light be established. This should properly be done by the Brazilian Government, but their refusal should not prevent the mercantile communities of Great Britain and the United States from bringing into operation so important an aid to their commercial interest. I consider that the southerly current is felt in some months of the year, though probably not in all, as far to the eastward as the Roccas, seldom extending more than a few miles beyond

them, and that to her entry on this current, after passing out of the usual westerly current, is mainly to be attributed the unfortunate loss of the "Duncan Dunbar."

J. H. Selwyn, Captain R. N.

Exhibited before me at the Greenwich Police Court aforesaid, within the Metropolitan Police District, the 2d day of December 1865.

James Traill, Stipendiary Magistrate.

Greenwich Police Court, 2 December 1865

EDWARD GELLATLY, upon his oath, saith:—

I RESIDE at No. 27, Leadenhall-street, City; I am one of the executors of the late Mr. Duncan Dunbar, and part owner of the ship of that name. I have known Captain Swanson since 1848. I have frequently heard of attestations as to his skill. I form the most excellent opinion of Captain Swanson, particularly for the rapid passages that he has made, and for the seaman-like manner in which his ship has been kept, the "Duncan Dunbar" having been always kept like a yacht, and was the pride of the East India Docks; he has made two passages to my knowledge in 78 or 79 days to and from Sydney. I consider him to be a careful as well as a skilful commander, and that remark applies to his navigation. I never was at sea with him. Many passengers have remained in London for months in order to sail with Captain Swanson in the "Duncan Dunbar." My orders to all our captains are to make the quickest possible passages, and to run no risks. The "Duncan Dunbar" was fully insured, it being my practice to insure all our ships; the owners, nevertheless, are considerable losers by this loss.

Having heard all the evidence in this case, I would, with deference to the Court, express my opinion as still unchanged in respect of Captain Swanson, being anxious before I formed an opinion to attend this inquiry, which I have done throughout.

Edward Gellatly.

The within deposition of the said Edward Gellatly was taken, upon oath, before me, at the Police Court aforesaid, within the Metropolitan Police District, this 2d day of December 1865.

James Traill, Stipendiary Magistrate.

CAPTAIN SWANSON'S Account of the Loss of the Ship "Duncan Dunbar" of London, 1,374 tons register, bound to Sydney with Passengers and Cargo.

I OWN four sixty-fourths of the ship.

She left the East India Docks on the evening of the 28th August 1865, and Gravesend next morning, arriving at Plymouth on the morning of 1st September; we embarked passengers there, and sailed on the 2d September, at 2 P. M., from which time we had a continuation of light variable winds, and very fine weather. On the 17th September passed the Madeiras.

In lat. 30° N. met with the N. E. trades.

In 3° N. lost the trade winds, after which we experienced light variable winds and squally weather, with a great deal of rain. The winds were principally from S. to S. S. E.

On the 5th October, at 2 A. M., the weather cleared up, and the wind set in steady from the S. S. E.; we were then in lat. 2° 20' N. and long. 27° 20' W.

On the morning of the 6th October, we crossed the Equator in long. 30° 40' W. I was aware that we were far to the westward, but as shipmasters are recommended at the present day by high authorities, including Lieutenant Maury, when driven to the westward, to stand on, and not to tack, I determined to do so; I had no doubt of weathering Cape St. Roque, and I knew I could more easily make my easting there than in the variables on the other side of the Equator.

On the 7th October, at noon, we were in lat. 2° 57' S. and long. 33° 12' West. Las Roccas bearing on my chart (Norie's) S. S. W. $\frac{1}{2}$ West, distant 65 miles, and by the course we were making, viz., from south-west $\frac{1}{2}$ south to south-west by south, I expected to pass at least ten miles to the westward, and that without allowing for the current, which at noon this day, by observation, had set the ship to the westward, at the rate of two knots per hour for the last 24 hours. From the strong W. N. W. current we had experienced the last 24 hours, I expected to pass 26 miles to the westward of Las Roccas. At 6 P. M. I worked up the reckoning from noon, and found Las Roccas bearing S. $\frac{1}{4}$ E., distant 20 miles, allowing for a knot and a-half current and the usual leeway. For abundance of caution, I sent the second mate, Mr. Robinson, and an A. B., up on to the foretop-sail yard to look out. At 8 P. M. I ordered the chief officer, Mr. Cook, to relieve the second officer on the foretop-sail yard, taking charge of the deck myself. A few minutes afterwards, Robinson came to me, and reported a strange appearance on the water to windward, and at the same moment a cry came from aloft, "breakers ahead, and on the weather bow;" I at once ordered the helm hard a-port, and let go the lee main and weather cross-jack traces; she immediately payed off, but struck on an outlying rock. We then threw all aback, expecting she would tail off, but she stuck fast; by the rocks visible, we could see that the tide was falling.

falling. I immediately sounded round the ship, and found from 15 to 20 feet. The ship was rolling heavily, and I could not have got an anchor out even had it been advisable. At 11 P. M. I commenced throwing cargo overboard to lighten the ship, as I expected that by keeping all aback she would tail off when the tide began to rise. I had all the pumps manned, and the ship did not make any water of consequence. At 2 A. M. on the next day (the 8th) I got into the cutter with four men and pulled along the reef, to see if we could find any passage through the surf, as the passengers were very anxious to get out of the ship, but we could see no passage through; I at the same time took soundings round the ship, and found from 15 to 18 feet close to the ship. At 4 A. M., when the tide began to make, the ship struck very heavily, and the rudder and stern post soon gave way, and the ship filled almost immediately. At daybreak I again got into the boat and went along the surf, and fortunately found a landing place on a low islet, with sandy beach. About 10 feet above the sea the place was covered with birds and large quantities of wood, evidently the remains of ships that had been wrecked on the reef. I immediately returned to the ship, and commenced landing the lady passengers and children in the two life boats and cutters, getting all the passengers safely on shore by 8 A. M., having to lower them over the stern into the boats, as the heavy sea would not admit of the boats being placed alongside of the ship to take them in. We then landed sails and spars for tents, and afterwards provisions and water; I tried to get the water casks on shore off the deck, but three of them were stove alongside in attempting to do so. On Monday morning, the 9th October, we got one full water cask on shore, and a great many stores of various kinds, such as hams, cheeses, preserved meats, fish, and a quantity of live poultry; at noon got an empty tank on shore and got it filled.

On Tuesday, got another empty tank on shore, and filled it; also landed a quantity of luggage. On Wednesday morning, the 11th, I sent the chief and second mates on board to get another tank on shore. Having first taken an account of stores and water landed, which I found would be sufficient to victual us all for 30 days, and appointing a committee of five, consisting of four of the chief cabin passengers and the chief mate, to act in my absence, I made preparations to start in one of the boats for Pernambuco to obtain assistance. At 10 A. M., on the 11th of October, I started in one of the life-boats, accompanied by Mr. Gallaway, a passenger, and six of the crew, for Pernambuco. We had strong south-east winds and a very rough sea, the boat shipping a great deal of water. At 5.30. A. M. on the 12th October we sighted a vessel astern standing towards us. We hoisted the ensign union down; they saw us, and hove to. On getting alongside we found it to be the American barque "Hazard," from Boston, bound to Bahia. The captain very kindly took us and the boat on board, and said he would drop us off Pernambuco, which he did on the morning of the 15th October. We got on shore at Pernambuco at 9.30 A. M. When we were taken on board the "Hazard" we were about 100 miles S. S. W. of the Roccas. On landing at Pernambuco I immediately called on the British consul, Captain Doyle, and Mr. Wilson, my agent, and finding that we could get no vessel in the port that would go to Las Roccas to the rescue of the passengers and crew, I, by their advice, went on board the R. M. S. "Onida" on her arrival the following morning, and saw the captain and mail agent, both of whom immediately agreed to call at the Roccas and take the passengers and crew from there to Southampton, which I am happy to say was safely done without any loss of life or limb, or any inconvenience to speak of.

The accident must have occurred by reason of a strong current unknown, and unmarked on any chart or in any book in my possession, having set us, since noon, greatly to the southward. This current I afterwards felt in the boat, having been set half a point to windward of our course by the time we were picked up, and having gone a greater distance than could have been due to the rate at which the boat was going through the water. I also observed that floating portions of the cargo were carried to the southward against the strong trade wind, and not to the westward of the island.

The day previous to the wreck, as before stated, a current was running strong to the W. N. W., as I was led to expect by my charts and books, which I believe to contain the latest information. In addition to the above, I should state that since my return I have inspected the Admiralty chart, and find that the Roccas are placed $33^{\circ} 47'$ longitude. The chart by which I sailed places them $38^{\circ} 45'$, and Norie's Epitome $33^{\circ} 20'$. My old chart gives them at $33^{\circ} 20'$, being the same as in the Epitome, and Horsburgh at $33^{\circ} 25'$.

I have since discovered that the actual position of the Roccas, as surveyed by Captain Selwyn, R. N., is $33^{\circ} 50' 9''$, or five miles to the westward of the position given by my chart.

Lieutenant Lee, U. S. Navy, confirms Captain Selwyn's position. There were three chronometers on board the ship, in which I have the greatest confidence, having made the passage five or six times to Sydney without sighting land, and found them correct within two or three miles.

I took one of my chronometers (that which I employed for sights) with me in the boat to Pernambuco, and took sights on four different days by it, and found the rate and error perfectly correct.

On a south-westerly course the bimetal compass always showed the ship a point to the southward of the standard compass.

Before leaving for Pernambuco I left full directions how to proceed, in case of my absence beyond 12 days, in order to effect a communication, and prepared a second boat for the purpose.

I may state that the reason which induced me to go to Pernambuco myself, rather than send the mate, was that he could efficiently, with the aid of the committee, keep order on

the Island, while I should best care for the interest of all concerned by proceeding thither. I did not come back to the Island in the steamer "Oneida" because my presence was still required at Pernambuco, and I was assured that the captain of the "Oneida" and the Admiralty Agent would do all that was requisite at Las Roccas. I returned to England by the next steamer; I have been since the year 1848 annually engaged in the Sidney trade under the firm of Messrs. D. Dunbar and Sons, as Captain since 1855, and I produced testimonials, including one from the passengers of the wrecked ship, and which will show the estimation in which I have been held. I hold a commission as Lieutenant in the Royal Naval Reserve.

J. B. Swanson.

The within Statement was taken and made before me at the Police Court Greenwich, within the Metropolitan Police District, this 2d day of December 1865.

James Traill, Stipendiary Magistrate.

Greenwich Police Court, 2d December 1865.

The said JOHN BANKS SWANSON further states

I hold a Certificate of Competency from the Board of Trade as Master, dated the 6th of July 1852.

I have upon one occasion, homeward bound, passed to the westward of Las Roccas, and twice outward bound passed between Fernando and the Roccas, but had never sighted the Roccas. I knew it was a low-lying island; and I expected that I could have seen breakers on that night two or three miles off; I did not expect to see breakers; I expected I was 20 or 30 miles off the island, to the westward.

J. B. Swanson.

Taken before me at the Police Court aforesaid, this 2d day of December 1865.

James Traill, Stipendiary Magistrate.

EXTRACT from the Log Book of the "Duncan Dunbar."

D A T E.	Hours.	Knots.	Courses.	Winds.	
Friday, 6 Oct. 1865 -	1	8	S. W. $\frac{1}{2}$ W.	S. E. by S.	Strong wind, with heavy head sea.
	2	8			
	3	8			
	4	8			
	5	8	-	-	Washed decks, and P. S. at 18 ms.
	6	8			
	7	8	-	-	Hands variously employed.
	8	8	-	-	
	9	8			
	10	8			
	11	8	-	-	Passed a Danish schooner, standing as ourselves.
	12	8	-	-	Bar. 30.0. Ther. 85.
Saturday, 7 Oct. 1865 -			Latitude $0^{\circ} 46'$ S.; long. $31^{\circ} 9'$ W.; course S. 45° W.; dist. 179 miles.		
	1	7	S. W. by W.	S. E. by S.	Strong steady wind throughout, with squalls occasionally.
	2	7			
	3	7			
	4	7			
	5	7			
	6	7	-	-	Vessel ahead, as ourselves.
	7	7	-	-	P. S. at 18 ms.
	8	7			
	9	8			
	10	8			
	11	8	-	-	Passed the above, which proved to be a barque.
	12	8	-	-	Midnight. Strong wind and fine weather.
	1	7	S. W. $\frac{1}{2}$ W.	S. E. by S.	Strong wind and heavy squalls, in fore and mizen royals and main royal staysail.
	2	7			
	3	7			
	4	7			
	5	7			
	6	7	-	-	P. S. at 20 ms.
	7	8	-	-	
	8	8	-	-	Hands employed cleaning steerage, greasing down, &c.
	9	8			
	10	8	-	-	Tradesmen at their trades.
	11	8			
	12	8	-	-	Noon. Steady, fine, and clear.
			Latitude $2^{\circ} 56'$ S.; long. $33^{\circ} 10'$ W.; course S. 45° W.; distance 179 miles.		

EXTRACT from the Log Book of the "Duncan Dunbar"—continued.

DATE.	Hours.	Knots.	Courses.	Winds.	
Saturday, Oct. 7, 1865 - (continued).	1	8	S. W. by S.	S. E.	Fresh wind, and fine clear weather.
	2	8			
	3	8	S. W.	S. E. by S.	Hands variously employed.
	4	8	-	-	A westerly current sets at the rate of two miles an hour.
	5	7			
	6	7			
	7	7			
	8	7	-	-	Struck on the rock Las Roccas. Port the helm and backed all yards: hauled the mizen out to cant
	9	-			her stem clear of a rock to leeward, but water falling found it of no service.
	10	-			Cut away fore topgallant mast, but did not fall. Commenced to discharge
	11	-			cargo, and both pumps set a-going, manned by passengers and idlers. Three
	12	-			feet and six inches water in the hold; 4 a.m., gained four inches on the leak;
Sunday, Oct. 8, 1865 -					but at half-past four water rising, the leak gained fast; knocked off pump-
					ing, and discharged cargo, and prepared to land all passengers, captain taking
					four hands to find a suitable place. 5. All passengers ordered on deck to
					prepare to land; and at seven o'clock all were safely landed. Hands
					throughout the remaining part of the day landing stores, sails, and all
					necessaries, for rigging tents, and finding provisions for them. No water on
					the island; landed a little; and, at four, cut away foremast. 6. Cut away
					mizenmast. 7. All hands left the wreck, with the exception of captain and
					boatswain, who stayed during the night. Set watches during the night to look
					after wreck, and keep the fire alight. One officer and two men in a watch.
Monday, Oct. 9, 1865 -	5 a.m.				Left the beach, and landed stores, water, and passengers' luggage. 12. Mainmast
					fell to port, the ship listing on the rock to port, carrying away lee bulwarks of poop, cut away
					lanyards, and fell over. All hands left the wreck at 8 p.m., being a little past high water;
					rigged a flag staff, and hoisted the French flag on it; sighted a sail, homeward bound.
Tuesday, Oct. 10, 1865 -					Continued landing stores and passengers' luggage, water, &c., and landed 1 cask containing 160
					gallons of water; landed a tank containing 400 gallons; all hands left the wreck at 9'clock.
Wednesday, Oct. 11, 1865	5.				Launched cutter and life boats, and proceeded to wreck, and landed during the day two
					tanks, containing 800 gallons, also provisions, comprising live stock, hams, cheese, bread, &c.,
					the captain taking life boat with six men and one passenger, Mr. Galloway, to proceed to
					Pernambuco to get assistance; left the wreck at 5 o'clock; all hands mustered, and rations,
					daily allowance named without one dissenting voice.
Thursday, Oct. 12, 1865					The captain in leaving the island, vested his rights to command to myself, George Cooke, C.
					officer, and to Mr. Thornton, Mr. Davis, Mr. Jones, and Mr. Robinson, passengers, as a com-
					mittee, to serve out stores, &c., whilst I was engaged landing stores from the wreck; sighted
					a vessel outward bound; sent a boat after her, but she did not see us.
Friday, Oct. 13, 1865 -					Hands still engaged landing stores, &c., from the wreck, and also landed another tank con-
					taining 400 gallons, having now 1,500 gallons of water on the island, all hands being allowed
					one pint per day.
Saturday, Oct. 14, 1865	A.M.				Sent the cutter off to the wreck, and landed about 250 gallons of water, and four or five
					cwt. of bread, besides passengers' luggage, the between-decks being hove up, and only able
					to get water at low tides.
Sunday, Oct. 15, 1865 -					All hands mustered, and at 7 performed Divine Service at the wish of the passengers; did not
					launch any boats; sighted a ship standing to the westward, but took no notice of us. Weather
					fine throughout. Wind S.S.E.
Monday, Oct. 16, 1865 -					Sent the cutter away and landed water and three or four more sails, and prepared to launch the
					long boat, cutting away part of the port bulwarks; returned to the shore about 4 p.m. Car-
					penters employed making masts for life boat.
Tuesday, Oct. 17, 1865 -	6 a.m.				Cutter away to the wreck and landed more water, &c. Carpenter having finished
					the masts, sent them to the wreck, and sufficient bulwarks being out, and skids under the boat;
					launched her stem part over, when a steamer hove in sight, signalled to the wreck, and the
					cutter proceeded towards her, and she proved to be the Royal mail steam ship, "Oneida," and
					she kindly took all on board, commencing at 1.30 p.m., and all hands, baggage, &c., being on
					board by half-past 5 o'clock, every kindness being shown to us by the captain and officers.
					Weighed anchor, and at 6 o'clock she proceeded on her voyage towards Lisbon and
					Southampton.

Extract from the Log Book of the ship "Duncan Dunbar," exhibited before me at the Greenwich Police Court, within the Metropolitan Police district, this 2d day of December, 1865.

James Traill, Stipendiary Magistrate.

— No. 4. —

The Board of Trade to Mr. *Traill*.

Sir,

Board of Trade, Whitehall, 8 December 1865.

I AM directed by the Board of Trade to acknowledge the receipt of your Report of the Inquiry into the circumstances connected with the wreck of the "*Duncan Dunbar*."

James Traill, Esq.

I am, &c.
(signed) *T. H. Farrer.*

— No. 5. —

(M. 4226.)

The Board of Trade to the Admiralty.

Sir,

Board of Trade, Whitehall,
13 December 1865.

Original.
I AM directed by the Board of Trade to inclose a Copy of the Report made by the Court of Inquiry into the loss of the "*Duncan Dunbar*" on *Las Roccas Reef*; and I also enclose Copy of the Evidence. The Board of Trade think that these papers, and especially the evidence of Captain Selwyn, R.N., and of Captain Trivett, and the recommendations of Captain Selwyn, which, as the Board of Trade are advised, raise questions of serious importance to navigators, should be brought to the notice of the Hydrographer. And they will be glad to receive from the Lords Commissioners any observations their Lordships may think it right to offer on the subject.

Copy of evidence to be returned.

The Secretary, Admiralty.

I am, &c.
(signed) *T. H. Farrer.*

— No. 6. —

(M. 4375.)

The Admiralty to the Board of Trade.

Sir,

Admiralty, 18 December 1865.

HAVING laid before my Lords Commissioners of the Admiralty your letter of the 13th instant, M. 4226, with its Enclosures, respecting the inquiry into the loss of the ship "*Duncan Dunbar*" on "*Las Roccas*" Reef, and conveying the request of the Board of Trade that the evidence given might be referred to their Lordships' Hydrographer, I am commanded to send you herewith, for the information of the Board of Trade, copy of a Report, dated the 16th instant, from Captain Richards on the case generally, and especially on the evidence given by Captain Selwyn, R.N., and Captain Trivett.

The Minutes of the Evidence at the Court of Enquiry are returned herewith.

I am, &c.
(signed) *John W. Briggs.*
Pro. Sec.

(Enclosure.)

(M. 4375.)

REPORT from Captain *Richards*.

16 December 1865.

IN regard to the loss of the "*Duncan Dunbar*" on the *Roccas Shoal*, I have to remark, that supposing the ship to have been in the position as stated in the evidence, at noon, viz., lat. $2^{\circ} 56' S.$, long. $33^{\circ} 11' W.$, and to have subsequently steered as stated from S.W. $\frac{1}{4}$ S. to S.W. by S., and gone at a speed of between 7 and 8 knots; moreover, to have experienced the usual westerly current as shown on the Admiralty chart, then she should as nearly as possible have been on shore on *Las Roccas* at the moment she was, and her grounding proved that her chronometers were in no appreciable degree in error, and that the current, as shown on the chart, and stated in the Admiralty Sailing Directions, really did exist.

It seems very improbable that the witnesses examined did not give the extreme westerly course made by the ship, and the more so as it appears the Log Book was altered some days after the wreck, to give the ship a more westerly course than had been assigned to her at the time.

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As regards the evidence given by Captain Selwyn, R.N., and Captain Trivett of the Mercantile Marine, to which the Board of Trade desire to draw special attention, I have to observe, that in regard to the southerly and easterly current described by the former officer as existing from 16 to 20 miles N.E. of Las Roccas, there is no evidence whatever of such a current in the records of this department; but, on the contrary, all the documents bearing on the subject go to prove the existence of a westerly current. In the plans of the Roccas, made by Captain Parish, R.N., in 1856, and by Captain Selwyn, R.N., in 1857, no current is mentioned; and in the remarks of the latter officer, which accompanied his plan, he notices the fact of the shoals lying in the heart of a westerly current, but communicates no information in regard to the southerly and easterly current stated in his evidence to have been established by him.

In regard to the remarkable difference in the latitude and longitude observed by Captain Selwyn, I have only to say that Lieutenant Lee, of the United States Navy, fixed the position of the shoal in 1852; that Captain Parish, R.N., made a survey of it in 1856, and planted 100 cocoa nut trees; and that Captain Selwyn again made a plan of it in the following year and planted seven trees, three of which appear to have survived; that the observations of these three officers, in regard to latitude, agree within five seconds, and that the difference in their longitude amounts to two or three miles, which is no more than was to have been looked for in results obtained by ordinary ships of war not specially supplied with instruments for the purpose.

With reference to the statement of Captain Selwyn and Captain Trivett, that they would have pursued the course adopted by the Master of the "Duncan Dunbar" under similar circumstances, I am obliged to say that I entirely differ from them as to the prudence and safety of such a course, and it is, I think, a dangerous doctrine to disseminate that a ship-master in charge of life and property is justified in abstaining from making all possible observations to ascertain his position when in the neighbourhood of danger. A simple observation for longitude, at 4 P.M. of the 7th of October, ought to have prevented the catastrophe which occurred only four hours later.

In regard to the recommendations of Captain Selwyn, referred to in the letter from the Board of Trade, which, I presume, alludes to the desirability of the establishment of a light-house on the Roccas, I am of opinion that, however valuable such a light might be to the local trades, and admitting, in an abstract point of view, the utility of a light on any small low island in the middle of the ocean, it is not necessary for ocean ships, which would assuredly never adopt so westerly a route as the Roccas, unless compelled to do so, which would very rarely be the case.

It is submitted that these observations should be referred for the information of the Board of Trade.

(signed) *Geo. Henry Richards*, Hydrographer.

(M. 4375.)

— No. 7. —

The Board of Trade to Mr. *Traill*.

Board of Trade, Whitehall,
21 December 1865.

Sir,

WITH reference to your Report on the wreck of the "Duncan Dunbar," I am directed by the Board of Trade to inform you, that they were so dissatisfied with some of the evidence, that they thought it desirable to take the opinion of the Hydrographer to the Admiralty.

I now enclose his Report for your information, and I am to add that the professional officers of the Board of Trade entirely agree with the hydrographer.

His Report states the facts of the case so fully, and points out the errors in the evidence of Captain Jasper Selwyn and Captain Trevett so distinctly, that it is unnecessary to enter at large upon these subjects in this letter.

The Board of Trade have only to observe, that the witnesses in question (upon whose testimony the conclusions of the Court seem to have been based) not only assume hypothetical currents (of the actual existence of which there is no evidence whatever) in order to account for a wreck, which the course steered is quite sufficient to account for; but they pronounce and give credit to the opinion that the master of a first class ship in the merchant service, when within two or three hours' sail of a dangerous reef, and steering directly for it, is justified in neglecting the obvious precaution of taking an afternoon observation.

The Board do not believe that such an opinion obtains amongst the intelligent officers of the mercantile marine. But, if such an opinion were by means of the evidence in question to receive a credit which it does not possess, the result of the inquiry would be to do serious harm, and to increase the dangers of shipwreck.

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In order to prevent the evidence in question from having this effect, the Board of Trade think it their duty to publish this letter and the enclosed report from the Hydrographer.

James Traill, Esq.,
Police Court, Greenwich.

I am, &c.
(signed) *T. H. Farrer.*

— No. 8. —

(M. 4375.)

The Board of Trade to the Admiralty.

Sir,

Board of Trade, Whitehall, 9 February 1866.

REFERRING to previous correspondence on the case of the "Duncan Dunbar," I am directed by the Board of Trade to request you to move the Lords Commissioners to inform the Board of Trade, whether the extracts from meteorological registers deposited in the Meteorological Department of the Board of Trade, which have been furnished by that department to the Hydrographer, have enabled the Hydrographer to give any further information respecting the case in question, and especially respecting the south-easterly currents which have been said to exist in the neighbourhood of Las Roccas Reef, and concerning the alleged necessity of a lighthouse on that reef.

The Secretary, Admiralty.

I have, &c.
(signed) *T. H. Farrer.*

— No. 9. —

(M. 743.)

The Admiralty to the Board of Trade.

Sir,

Admiralty, 12 February 1866.

WITH reference to your letter of the 9th instant, requesting to know whether any further information has been obtained in regard to the question of the currents in the neighbourhood of Las Roccas Reef, I am commanded by my Lords Commissioners of the Admiralty to request you will state to the Lords of the Committee of Privy Council for Trade that, in consequence of the conflicting statements which have appeared in regard to the currents of the Atlantic, arising out of the inquiry into the wreck of the "Duncan Dunbar" on the Roccas shoal, a hydrographic notice has been prepared, embodying all the information the Admiralty possesses on the subject, for issue in the usual manner to the public, copies of which will be forwarded to the Board of Trade when ready.

To the Secretary to the Board of Trade.

I am, &c.
(signed) *W. G. Romaine.*

COPY of NOTICE referred to in Admiralty Letter of 12 February 1866.

NOTICE to MARINERS.

(No. 6.) •

ATLANTIC OCEAN—CURRENTS NEAR THE EQUATOR.

DOUBTS having recently arisen as to the correctness of published statements relative to the currents that prevail in the immediate neighbourhood of the Roccas, a dangerous shoal in lat. $3^{\circ} 51' 30''$ S., long. $33^{\circ} 47'$ W., 130 miles to the N.E. of Cape St. Roque (and which lies in the track of vessels taking an extreme westwardly route in passing from the North to the South Atlantic Oceans), it is deemed desirable to publish for the information

mation of mariners, the following facts bearing on this question, lest the authority on which the well-grounded statements, hitherto received by seamen, may be unjustly weakened.

The latest Admiralty hydrographic work embracing the Roccas was published in 1864, under the title of "The South American Pilot," Part I. In it, in addition to the position and nature of these rocks, the following statement is given: "The current in the vicinity of Fernando Noronha and the Roccas sets strong to the westward; at two miles westward of the latter, it has been found to run $2\frac{1}{2}$ miles an hour. The many wrecks that have taken place on the Roccas is sufficient to prove to the mariner the necessity of caution when in the vicinity of this dangerous reef;" and, "when in the vicinity of St. Paul's rocks, chronometrical observations should be frequently taken, allowance made for the current, and a good look-out kept. In proceeding to the southward, if to the westward of Fernando Noronha, the same precautions are necessary to avoid that dangerous reef, the Roccas."

The stream which sets to the westward past this reef, as just described, is well known to seamen as the equatorial current. This great current is thus broadly described by the late Major Rennel, whose well known investigations of the currents of the Atlantic Ocean, as derived from the logs of all the ships of war and Indiamen which had traversed those seas for 30 or 40 years previously to his death in 1830, form the basis of the several works on this branch of hydrography which have been published for the use of navigators: "This stream continues its course along both sides of the equator (from the western coast of South Africa). It receives constant supplies from the drift current of the South Atlantic, so that by the time it has reached the middle point between the two continents, it has acquired during the season of the northern summer a vast breadth, and in some places a rate of three miles per hour. At the middle point between the two continents, and precisely at the equator, the stream (now considerably widened) sends off a very large branch to the N.W., whilst the main stream turns to the W.S.W., pointing to the promontory of Cape St. Roque, and when it approaches that cape it subdivides, the largest part passing by the north of the Cape towards the West Indies, the other southward along the eastern coast of Brazil."

As many recent navigators have in practice adopted a more westwardly route for crossing the equator than prevailed in former years, it appears desirable that the facts accumulated as to the general correctness of the foregoing description, and especially as to the direction and strength of the currents in the vicinity of the Roccas and Cape St. Roque, should be brought to the notice of seamen briefly and clearly.

In the immediate neighbourhood of the Roccas there is the following testimony to the generally strong westerly current:—

"The East India ship 'Britannia' and 'King George' transport were wrecked on the Roccas at 4 a.m., 2d November 1805, when the current set at the rate of $2\frac{1}{2}$ knots to the westward."—*Brazil Pilot*, 1818, p. 31.

Lieutenant Commander Lee, in the U.S. brig "Dolphin," was employed 14 days in March 1851 sounding near and surveying the Roccas and their vicinity. He states, "the current in the vicinity of this reef sets from between S.E. by E. and E. by N. at the rate of from $\frac{2}{10}$ to $1\frac{1}{2}$ knots per hour. The surface current found by trials on four different days sets from between S.E. and E. by N. from $\frac{2}{10}$ to $1\frac{1}{10}$ knots per hour. At our anchorage under the lee of Sand Island the tide ran from $\frac{2}{10}$ to $\frac{3}{10}$ knots per hour, setting from between S.S.E. and E. by N. towards the northward and westward;" also, "the current between the Roccas and the Main sets generally from the southward and eastward from 1 to $1\frac{1}{2}$ knots."

In March 1856, H.M.S. "Sharpshooter," Lieutenant Commander Parish, anchored near the Roccas, and at the suggestion of the British Consul at Pernambuco, planted several cocoa-nut trees. In this officer's remarks he states, "we found the current to set W.N.W. true, between one and two miles per hour."

On 12th November 1856, in the afternoon, the ship "True Briton," in passing the Roccas and observing signals of distress on the shore, endeavoured to communicate and render assistance by boat, but from the strength of the current was unable to do so from the ship being swept to leeward so fast. On the 13th November, it is stated, "found that the ship during the last 24 hours had been set to the westward 60 miles. On the 14th November, find that the ship had been set to the westward 36 miles during the last 24 hours."

In 1858, Commander J. H. Selwyn, in H.M.S. "Siren," visited the Roccas and erected a temporary beacon. He states that the "anchorage is fair and protected from the prevalent swell from N.E. to S.E.;" and "from its situation in the heart of a westerly current, which varies in force from one to two miles, and its comparative vicinity to the main-land, a lighthouse would be most valuable to the mariner, as a means of ascertaining his position with certainty."

Numerous other isolated examples of the westerly current prevailing near this reef will be found in published works; but the following analysis of the registers of 930 ships, which have been deposited with the Meteorological Department of the Board of Trade between 1856 and 1865, will, doubtless, be deemed sufficient.

Of these 930 ships passing from the North to the South Atlantic Ocean, 42 passed within a distance of 30 to 40 miles east or west of the Roccas at various seasons of the year. Of these 42, 14 do not record whether they have experienced any current or not. One experiences "a strong westerly current," and was "driven back." The remaining 27 found currents of the following direction and rate:

- 11 vessels were set West ;—4 of these from 48 to 24 miles, and the remaining 7, from 20 to 10 miles a day.
 8 „ „ W.N.W.;—4 of these from 51 to 30 miles, and 4 from 29 to 21 miles a day.
 5 „ „ W.S.W.;—3 of these from 48 to 30 miles, and 2 from 20 to 10 miles a day.
 1 vessel was set S.W.;—40 miles a day.
 2 vessels were set North;—12 to 8 miles a day.

The strongest of these 27 recorded currents were found in June, July, August, and November.

Misconception has also arisen relative to the easterly current which has occasionally been found in the parallels of 9° to 2° N., a special and striking example of which is given in the "South American Pilot," as having been experienced by the brigantine "Monte Christo" in her voyage from Cayenne to Parahiba, in July and August 1862.

This counter current has been traced to extend, at certain months of the year, from the meridian of 53° or 50° W. to that of about 25° W., and thus joining or forming a part of the well known Guinea current. It is seldom experienced to the southward of 2° N., and there are very few records of its being found on or to the southward of the equator; it must not, therefore, be confounded with the equatorial current, as before described, for in the meridian of the Rocas its southern edge may generally be expected to be found about 350 miles to the northward. The western limits of this occasional easterly current have been ascertained from numerous observations of French ships of war visiting Cayenne and the neighbouring ports, and discussed by the able French seamen Lartigue and Montravel (1827 and 1851), and may be generally stated as existing between the meridians of 53° and 40° W. and the parallels of 9° and 5° N., where it has been found running at the rate of 60 miles a day in July, August, and September. Within these limits this counter current does not appear to be constant or certain in direction, a westerly current more generally prevailing.

To the eastward of 40° W. part of this easterly current approaches nearer the equator, or to about 2° N., and decreases considerably in strength, until joining the Guinea current, where it increases again in velocity as it nears the African shores. Within these eastern limits it appears to run the strongest in the summer and autumn months; and east of 30° W. to be generally constant during the year. Between the meridians of 30° and 20° W., and the parallels of 8° and 4° N., it has been found to run from 30 to 15 miles a day.

As the best meridian for crossing the equator by outward bound ships still appears to be an unsettled question among navigators, and as it is connected with the subject of the equatorial currents referred to above, it may be of interest to seamen to append the following tabular statement, showing where each of the 930 ships already alluded to made their crossings; it being observed that all these ships were bound from British ports either to or round the Cape of Good Hope, round Cape Horn, or to some port of South America, southward of Bahia, between 1855 and 1865:—

Meridians of crossing the Equator.

		East of 20° W.	20° to 22° W.	22° to 24° W.	24° to 26° W.	26° to 28° W.	28° to 30° W.	30° W. and Westward.
January	- No. of Ships	3	5	9	21	15	22	10
February	- "	5	6	7	12	13	4	2
March	- "	7	8	11	21	17	8	2
April	- "	7	12	25	12	11	2	2
May	- "	1	8	12	19	16	15	4
June	- "	-	2	8	11	24	22	10
July	- "	8	12	8	18	23	9	26
August	- "	17	10	11	15	19	5	11
September	- "	15	10	7	12	20	8	7
October	- "	2	9	6	11	22	17	16
November	- "	-	3	1	10	17	32	29
December	- "	2	1	8	9	21	12	10
930 Ships	- - -	62	86	108	171	218	156	129

It is impossible, without a more rigid analysis than has yet been bestowed on this question of crossing the equator, to determine with precision the best meridian. It is certain that it must vary according to the seasons, and perhaps the months; and as will be seen by a few examples appended, the evidences of the advantages of the more easterly route contrast favourably with the extreme westerly route.

Until, however, the various conditions attending the size, class, and speed of the ships, the favouring circumstances or otherwise of veins of wind, or calms, and other local conditions are duly allowed for and include a large number of ships extending over several years,

years, it appears reasonable to assign weight to the practical results afforded in the above tabular statement.

One fact is observable in compiling this statement, viz., that of the 930 ships, 808 passed 100 miles or more to the eastward of the Roccas, and thus to the eastward of Fernando Noronha.

Examples of the number of days occupied by sailing ships in reaching the equator in different meridians and at different months of the year from among the 930 ships quoted:—

In January and February, three ships of 609, 614, and 1,126 tons respectively, cross the equator in 21° , $24\frac{1}{2}^{\circ}$, and $32\frac{1}{2}^{\circ}$ W., and are, respectively, 21 days from Greenock, 22 days from the Start, and 23 days from Liverpool.

In March, April, and June, four ships of 964, 898, 1,041 (deeply laden), and 477 tons respectively, cross the equator in $21\frac{1}{2}^{\circ}$, $23\frac{1}{2}^{\circ}$, $24\frac{1}{2}^{\circ}$, and 28° , and are respectively $21\frac{1}{2}$, 26, 31, and 34 days from Deal, Plymouth, Gravesend, and Liverpool.

In July and September, three ships of 1,160, 1,202, and 765 tons respectively, cross the equator in $30\frac{1}{2}^{\circ}$, $32\frac{1}{2}^{\circ}$, and $32\frac{1}{2}^{\circ}$ W., and are $20\frac{1}{2}$, 38, and 42 days respectively from Seilly, the Downs, and Liverpool.

In November 1855 and 1856, two ships of 1,050 and 300 tons respectively, cross the equator in $31\frac{1}{2}^{\circ}$ and 31° W., and are 45 and $21\frac{1}{2}$ days in crossing the equator from Liverpool; the ship making the longest passage leaves Liverpool with a "fair but light wind, which lasted, with slight intermission, to the N.E. Trades, which were also light. Ship was 14 days from 6° N. to the equator."

By Command of their Lordships,

(signed) *Geo. Henry Richards,*
Hydrographer.

Hydrographic Office, Admiralty, London,
3 February 1866.

— II. —

LOSS OF THE "BARBADIAN."

— No. 1. —

(M. 4422.)

Mr. *Raffles* to the Board of Trade.

Borough Magistrate's Office, Dale-street, Liverpool,
21 December 1865.

Sir,

I BEG to forward my report on the loss of the "Barbadian." Captains Harris and Hight will sign the report in London. The evidence will be sent in due course.

I am, &c.
(signed) *T. S. Raffles.*

T. H. Farrer, Esq.

(M. 4422.)

REPORT OF OFFICIAL INQUIRY.

To the Right Honourable the Lords of the Committee of Privy Council for Trade.

My Lords,

I HAVE, in conjunction with Captains Harris and Hight, as nautical assessors, held the inquiry ordered by your Lordships into the loss of the steamship "Barbadian" upon the Blackwater bank on the 6th day of December last.

The "Barbadian" was an iron screw steamer, built at South Shields in 1856, of 950 tons gross, with two engines of 150 horse power, and was owned by the West Indian and Pacific Steam Company (Limited). She was commanded by Mr.

James Graham, who held a certificate of competency, and had a crew of 35 all told; and she had on board three first-class passengers and one consular passenger, who was carried free. She had a general cargo of about 500 tons, and was bound to Barbadoes and other West Indian ports.

The "Barbadian" sailed from Liverpool at noon on the 5th of December, under charge of a pilot, who left at the Bell Buoy at 2 p.m. At 9 p.m., the South Stack was abeam, according to the evidence of the officer of the watch, her course being then S.W. and by W., which was continued till midnight, at a speed of about $9\frac{1}{2}$ knots. At 12.15 a.m., on the 6th, the quartermaster, who had come on watch at midnight, came to the con and found the course W. by S., which was continued till within a very short time of striking. At 4 a.m., the second mate again came on deck, found the course as just stated, and saw a revolving light two points abaft the starboard beam, which he was informed by the chief mate was the Tuskar. In a few minutes a bright fixed light was discovered on the port bow. The helm was put a starboard and the light reported to the captain, who came upon the bridge, and having looked at it for a short time, steadied the ship at W.S.W. The captain then went below, leaving directions to be called at 8 a.m., or in case the ship neared the land. In about a quarter of an hour the ship struck upon what proved to be the Blackwater Bank. No soundings were taken either before or after the disaster. The engines were ordered to be reversed, but became at once disabled, and they proceeded to get out the boats. In a few hours the ship parted in two. Eventually 25 persons were saved, of whom four were taken from the mizen rigging, on the afternoon of the 7th, by the Ross-lare lifeboat, after 27 hours' exposure. The captain, first mate, and four other persons, took refuge on the forecastle, from whence they were seen by the men on the mizen rigging to be washed away about noon.

This is the fourth inquiry into casualties to vessels which have struck upon the Irish coast within the last few weeks; and though in one case, before the same court, the evidence was such that no positive conclusion could be arrived at as to the cause of loss, there can be no doubt that in two of the cases, and in this, the disaster arose from bad navigation and a total neglect of the lead. This is not a question of either tides, or lights, or compasses. If the whole eastern coast of Ireland was made to bristle with lights, and masters of vessels still continued to persist in steering a westerly instead of a southerly course after rounding the South Stack, and before they are clear of the Tuskar, while a channel which is between 30 and 40 miles wide in its narrowest part is open to them, these casualties will constantly occur. And the more so if, when indications of danger appear, the lead, which is, or ought to be, always at hand, is utterly disregarded, as if it were useless lumber. In this case it is almost incredible that the low light on the Arklow light-ship should have been taken for the Tuskar, as there is a considerable difference in the revolutions of the two lights, or the bright light of the Blackwater for that of the Saltees, which exhibits two lights, especially when they ought to have known from the course and distance run from the Stack it was utterly impossible they could have been near the Tuskar; nor would any allowance for tide make an error of above 30 miles in their calculation in so short a period of time as to account for the position in which they supposed themselves to be when the captain shaped a course to the W.S.W., under the belief that he had passed the Tuskar, and was then rounding the Saltees.

While my assessors and I feel it to be an imperative duty in the interest of public safety to speak thus plainly in this report, and to point out as clearly as possible the errors which have caused the loss of so many vessels, and in this instance has produced so lamentable a loss of life, we cannot but regret that we are compelled to say anything which may call in question the seamanship of men who have lost their lives in the catastrophe, and cannot be heard in their own defence. The evidence of the survivors is, however, too conclusive to leave a doubt on our minds, that the "Barbadian" was lost by a repetition of the fatal error of bearing away to the westward too soon, and disregarding the lead.

In the course of the inquiry it transpired that the "Barbadian" sailed without the requisite certificate, under the Merchant Shipping Act, 1854, for vessels carrying passengers. But it was explained that the ship had been surveyed and reswung to adjust her compasses, and the usual declaration had been made, but not exchanged for the certificate of the Board of Trade.

As

As this circumstance has been already brought to the knowledge of the Board, it is only necessary for me thus incidentally to allude to it, as it has no bearing upon the loss of the ship.

I have, &c.
(signed) *T. S. Raffles,*
Police Magistrate.

Liverpool, 21 December 1865.

We concur in this Report.

Henry Harris, }
Edward Hight, } Nautical Assessors.

— No. 2. —

The Board of Trade to Mr. *Raffles*.

Sir, Board of Trade, Whitehall, 22 December 1865.
I AM directed by the Board of Trade to acknowledge the receipt of your letter of yesterday's date, forwarding the report of the inquiry held by you into the circumstances attending the loss of the S. S. "Barbadian."

I am, &c.
(signed) *T. H. Farrer.*

T. S. Raffles, Esq.

— No. 3. —

(M. 4489.)

Mr. *Roberts* to the Board of Trade, forwarding Minutes of Evidence.

In re S. S. "Barbadian."

Borough Magistrates' Office, Dale-street,
Liverpool, 27 December 1865.

Sir,
I BEG to transmit herewith copy evidence and other documents herein.

I am, &c.
(signed) *E. Roberts.*

T. H. Farrer, Esq.,
Secretary, Board of Trade.

(M. 4489.)

INQUIRY into the Loss of the "Barbadian" on the *Blackwater Bank*, on the 6th December 1865, before *T. S. Raffles*, Esq., Stipendiary Magistrate; and Captains *Harris* and *Hight*, Nautical Assessors.

Mr. *Hamel* appeared for Board of Trade; Mr. *Deane* appeared for the Owners.

EVIDENCE.

THOMAS PERROTT SHERLOCK, on oath, says:—

I was second mate of the "Barbadian." I hold a second mate's certificate of competency, which was lost with the ship. It was granted about November 1864, at London. I have been an officer in the "Barbadian" eight months; been second officer the whole time. This was Captain Graham's first voyage as master. He joined five or six days before leaving dock. William Burns was chief officer. It was his first voyage as servant of the company. We had a crew of 35 hands, all told; three passengers and one stow-away; 39 altogether. We had a general cargo on board. We left Liverpool on the 5th December, bound for Barbadoes and other West Indian ports. We hauled out of dock about 12 o'clock, and went away in charge of a pilot at once. The pilot left us at 2 o'clock at the Bell Buoy. The weather was foggy and wind moderate, about S.S.E. We made Point Lynas at 5 o'clock. It was abeam of us then; we next had the Stack abeam of us at 9 o'clock. She was steering about S.W. by W. I had the first watch—the mate till 12 o'clock. I came on deck at 8 o'clock, and the South Stack was then reported to me on the port bow by the chief officer, bearing about S. S. W., distant about 10 miles. The course was S. W. and by W. I steered that course all my watch. I got that

that course from the chief officer. The South Stack was abeam about 9 o'clock, bearing S. E. half E. We lost sight of South Stack on the port quarter about 11.45. The master was on deck all the time during the first watch with me. He set the courses. The chief officer relieved me at 12 o'clock, when I went below. I gave him the course, S. W. and by W. I came on deck again at 4 a.m. next morning and found the course steered to be W. and by S. The ship's speed had averaged about $9\frac{1}{2}$ knots. The wind was from S. E., strong breeze. I got the W. and by S. course from the mate; he did not tell me how long she had been on that course. We had fore and aft canvas at that time, going about same speed. The master was aft at 4 o'clock on deck. The chief officer pointed out a light two points abaft the starboard beam, which he reported as the Tuskar. It was a revolving bright light. I don't know if it was reported to the master. I saw a bright light on the port bow about 10 minutes after I came on deck. The chief mate was on the bridge. I reported it to him. In 10 minutes after we discovered it was a fixed light. We put the helm a-starboard, and then called the captain. He came on the bridge. She was hauled off to about S. S. W. We kept her so for about 10 minutes. The captain tells me to keep her steadied at W. S. W., and said he was going down, and ordered me to keep that course, and to call him if we approached land. We kept that course 15 minutes, when the ship struck. The fixed light was abaft the beam, and the revolving light about aft when we altered course. The fixed light was about five miles off. We were to the southward of it.

She struck gently at first. It was raining hard; there was a heavy swell on the banks. The wind was increasing. I put the helm a-starboard, ordered the engines to be stopped, and reversed full speed astern. As I went aft I met the captain running up out of the cabin. He exclaimed, "Good God, what's this!" Boats were swung out by captain's orders. She was then bumping very heavily. The canvas was on her then. I sung out for the carpenter, but he could not be found. The masts were not cut away whilst I was on board. The captain did not order them to be cut away. The starboard quarter boat went away first in charge of the third officer, with 14 of the crew and one passenger. Another passenger tried to get in and was drowned. This boat left by captain's orders in about 10 minutes after the ship struck. I went in the starboard life boat. The port quarter boat was half lowered down, and finding no seaman in it, the men got out again, and I next saw it floating about with two men in it. They then cleared the port life boat ready for bringing out. I left in the starboard life boat about six o'clock with the second engineer, fireman, first cook, and three seamen. In lowering the boat she sprung two of her butts, and we lay off for about two hours. We were trying to get to the ship but failed. The ship was bow on to us at the time. We were in broken water, and the men were done up and could not keep steerage way on it. They hailed us from the ship, but we could not hear what they said. We consulted, and put the boat before the wind and made for the land, and landed about three or four miles from the Cabore Point. We were taken in a cart to the coast guard station. The cook got killed.

No cast of the lead was taken either before or after the lights were seen, and the ship was swung just before leaving.

When I was examined before the Receiver of Wrecks, I was more like on my death bed. I have been strained. I was in the surf some time when the boat capsized. I was taken out of bed to (I think) the coast-guard station.

By Mr. *Dean*.] The captain and first mate were on deck all the time doing their duty. I did not see the log hove overboard. In the afternoon the captain asked me if there was a patent log on board. He asked me to get it ready to put overboard. He said it was to be put overboard when off the South Stack. I did not see it hove overboard.

It was dark, raining, and strong breeze when we struck. The ship was properly equipped in everything. The captain was on deck ordering the boats out, and attending to the safety of the crew and passengers.

By Captain *Harris*.] I have been at sea nearly five years. I have been in Green's employ out of London. I was in the "Clarence," "Prince of Wales," and "Lady Melville." I joined this company from the "Lady Melville" about eight months since. I have had charge of a watch for four voyages to the West Indies and back.

When I came on deck, at four o'clock, I found the ship steering W. and by S. The captain came on the bridge in about 10 or 15 minutes after. He saw the light. Neither he nor the mate mentioned what light it was. I took it to be the Saltees, and said so to the captain. He seemed to be satisfied, and did not order the lead to be hove. We had five boats, two lifeboats on the skid abaft the bridge, port waist boat swung inboard, hanging from the davits, and two quarter boats swung inboard.

I deny the statement made before the Receiver of Wrecks, as regards the W. and by S. course. I can't say whether I said so before the Receiver of Wrecks, or whether he made a mistake; but I was not in a fit state to make a statement then, I was so ill. When I saw my statement of the course in the paper I at once saw it was not correctly stated as to the course; and I told the third officer it was wrong, and I was afraid there would be some noise about it. I at first thought it might be a mistake in the newspaper.

There was a man on the look-out on the fore-castle when she struck; William Finn, I think.

By Mr. *Raffles*.] Everybody was sober on board.

Thomas Perrott Sherlock.

ROBERT WALMSLEY, on oath, says:—

I WAS quartermaster of the "Barbadian."

My first watch, as quartermaster, was from six to eight; our course during that time was S. W. and by W., up to eight o'clock. I was relieved by Quartermaster Massey. He is drowned.

I saw the South Stack at eight o'clock on the port bow, her head being south-west and by south about one or two points, distant about six or seven miles.

I came on deck again at 12 o'clock. The first thing I did was to trim the lights. I went to the con at a quarter past 12. I first went to the starboard compass on the mizen-mast. Her course was W. by S. by that compass. I went to the binnacle and asked the man at the wheel (Wm. Rees) how he was steering, and he said W. and by S. Lee relieved him at two a.m. About three o'clock I found her steering the same course, W. and by S. About half-past three the captain came on the bridge and spoke to chief officer, who went aloft, stayed about 10 minutes, returned to the bridge, and pointed in the direction of the starboard beam. What it was I could not tell. The log was hove by me at eight o'clock. I took it in at four o'clock. I handed it to the chief officer, and he handed it to captain, who went to binnacle lamp and examined it. I did not notice whether it was foul or not. At four o'clock the wheel was relieved, and in a few moments after the fore and aft canvas was all shaken. The chief officer then called me and asked me how he was steering. I told him W. by S. He asked him why the ship was shaking, and I went aft to see, and found the ship was S. W. by W. The chief officer took the wheel, and called for another hand, and the wheel was given to Bunting, having brought her back W. by S.

I had been quartermaster with Captain Graham before in the "Chilian."

By Mr. *Dean*.] The first course I took was S. W. by W. I can't say whether it was after seeing the South Stack or not. I never saw a more careful officer than Captain Graham in my life. He was continually on the alert. He was continually up and down between the weather-glass and the bridge.

By Captain *Harris*.] When I was at the con I can't say that I noticed whether he looked at the compass. We have the binnacle compass on the deck, the standard compass on the mizen-mast, and the bridge compass on the fore part of the bridge. The bridge compass was half a point more to the west than the standard compass. The two after compasses were correct.

The common log was not hove during my watch, and I did not notice what speed she was making. None of the square sails were set; the yards were braced forward. I was in the starboard life-boat, and was struck on the breast three times.

I saw no lights before I left the deck, which was about 10 minutes to four o'clock.

Robert Walmsley.

WILLIAM CAMPBELL, says:—

I AM a surveyor for Board of Trade. I surveyed the "Barbadian" first on the gridiron, and examined her hull on the 28th November 1865. I completed my survey on the 4th December. I found the hull and equipments in good condition, and the requirements of the Act of Parliament complied with in every way, as to boats, signals, &c. In consequence of a change of master I required the vessel to be reswung for adjustment of compasses, according to my usual practice with a passenger steamer. After the vessel was swung I was furnished with a certificate from the scientific adjuster, Mr. Cairnes (*duplicate produced*). I was then prepared to grant my declaration. It was called for on the sixth, but, having heard the vessel was lost, I refused to give it; but eventually I gave it, and reported the circumstance to the Board of Trade.

The practice is, that when we deliver the declaration to the owners, in many cases they telegraph to the Board of Trade, asking them to instruct the collector of customs to clear the ship, which the Board, in order to prevent delay, are in the habit of complying with.

William Campbell.

RICHARD BUNTON, on oath, says:—

I WAS an able seaman on board the "Barbadian." I was at the wheel on the morning of the 6th, when she struck. The course given me at four o'clock by the chief officer, was W. and by S.; we steered this course till after five o'clock; at five, I went away for 10 minutes for my coffee, and was relieved by Murphy. I gave him the course W. and by S. On my return, I found the course altered to W. and by S. half S. The captain came from the bridge and told me to steady her at W. S. W.; I did so till she struck. I was ordered to starboard the helm hard a-starboard; she did not come to; she bumped, and afterwards did not answer her helm. I was saved in the starboard life-boat—the second officer's boat.

By Captain *Harris*.] I had the first watch from 8 to 12; between 8 and 10, I was sent by the second officer to look at the compass to see how she was steering; her head

was then S. W. and by W. I believe there was half a point between the bridge and steering compass. I did not look at the standard compass. The weather was thick. I saw one light before the ship struck. It was on the starboard side, and was a bright fixed light, and appeared to me to be about four or five miles off.

That was half-an-hour before she struck. I saw it before I went for my coffee. It was broad on the starboard bow. When she struck, it was well aft on the starboard quarter.

his
Richard x Bunton.
mark.

MICHAEL FINN, being sworn, says:—

I WAS an able seaman of the "Barbadian," and was on the look-out from four till she struck. At four a.m. I saw one fixed light on the starboard bow, just on the cat-head; the man that was on before told me he had reported it.

By Captain *Harris*.] It continued in sight till the ship struck. We passed the light, and it was on the quarter when the ship struck.

I left the ship in the first boat.

By Mr. *Dean*.] I saw no steamer that morning passing inshore of us. I saw the mate on the poop; he was attentive to his duty.

Michael Finn.

JOHN STEWART, on oath, says:—

I WAS chief engineer in the "Barbadian." I hold a certificate of service as chief engineer. This was my third voyage in the "Barbadian." She had direct acting engines. Her horse-power was about 140 nominal. We went full speed after the pilot left, and continued till we ran on shore, which was about half-past five or a quarter to six. I was in charge, and in the engine-room when she struck. I had orders, by voice, to stop, and reverse full speed. The engines were not brought up by her striking; they reversed for about half-a-minute, and then they stopped. I can't say what caused them to stop, unless the stern post was twisted by striking. The engines worked satisfactorily on the voyage from Liverpool.

In half-an-hour we blew steam off, and left valves open. In about three-quarters of an hour the water was over the stoke-hole plates. The fires were drowned out.

When the ship broke up, about half-past 10 a.m. on the 6th, the master, mate, three seamen, and firemen went forward, and were all washed away in about an hour; they were holding on by the fish davit. I was in the mizen rigging with the third engineer, two firemen, boatswain, and a passenger. The boatswain and firemen were washed off. We saw a steamer passing the light ship; we made signals, but she did not see us. It was rather hazy. We could see about four miles off.

We were taken off by the *Ross Lare* life-boat, assisted by the tug-boat, at half-past two on the afternoon of the 7th, having been in the rigging 27½ hours. We had only a raw piece of beef between us all.

By Mr. *Dean*.] When the life-boat came, a steamer, sent by owners from Liverpool to assist, arrived to us.

John Stewart.

JAMES THOMAS ROGERS:—

I AM a lieutenant in the 91st Regiment, and stationed in Bengal, and am now on sick leave. I was making the voyage for the benefit of my health, and on private affairs.

When the ship struck, I was in bed. It was from five to half-past five. I looked up the companion, and I saw no one stirring about, and went down again and partially dressed myself. I went up on deck again and found the men stirring about, evidently getting quarter-boats ready.

I went down again and brought up a small portmanteau. I came up again and went to the port quarter-boat and saw men prepared to go off, and asked them to take care of my portmanteau, as I would probably go with them. They told me there was no room for me or my things. I took it back and put it on the seat. I was standing on the starboard side when some one, whom I believe was Mr. Sherlock, came and asked me if I would help him to try and get off one of the life-boats. I said, certainly, I would do what I could. I went with him to the port life-boat; some six or eight men followed, but they seemed to be in want of something to cut away the lashings. The men went off in different directions, and I returned aft. Mr. Thomas asked me if I would come with him in his boat; I did so, and got on shore safely, taking my portmanteau with me.

By Captain *Hight*.] I counted 14 in the boat; I may have omitted to count myself. I saw some boxes in the boat. My luggage was not insured.

By Mr. *Deane*.] My passage-money has been returned, and the additional money required to go by the royal mail, has been made up to me.

I estimate my loss at about 150*l*.

J. T. Rogers.

(M. 4489.)

12, Waterloo-road, Liverpool.

I, ALEXANDER CAIRNS, of Liverpool, hereby certify that on the 5th day of December 1865, I swung the steam ship "Barbadian," for the correction of local attraction; also, that the compasses were thoroughly examined, repaired, and adjusted, and are in perfect order for all purposes of navigating the aforesaid ship.

9 December 1865.

Alex. Cairns.

(M. 4489.)

COPY OF REGISTER.

Official Number of Ship, 13,759. Name of Ship, "Barbadian."

Port Number	-	-	-	-	279	Where built	-	South Shields, County of Durham.
Whether a Sailing or Steam Ship	-	Steam				British or Foreign built	-	British.
If Steam, how propelled	-	-	Screw			When built	-	-
Port of Registry	-	-	-	Liverpool			-	in 1856.

Number of Decks	-	-	Two.	Build	-	-	-	Clinch.
Number of Masts	-	-	Three.	Gallery	-	-	-	None.
Rigged	-	-	Barque.	Head	-	-	-	Demi Norman.
Stern	-	-	Elliptic.	Framework	-	-	-	Iron.

Tonnage.	No. of Tons.
Tonnage under Tonnage Deck	948.98
Closed-in Spaces above the Tonnage Deck, if any, viz., Space or Spaces between Decks	—
Poop	—
Round House	—
Other enclosed Spaces, if any, naming them	1.55
	950.53
Deduct Allowance for Propelling Power	225.88
Register Tonnage	724.65

Measurements.

Length from the forepart of the Stem under the Bowsprit to the aft side of the Head of the Stern-post, 220 feet 1 tenth.

Main Breadth to outside of Plank, 29 feet 4 tenths.

Additional Particulars for Steamers.

Deduction for Space required for Propelling Power, 225.88 tons.

Length of Engine Room (if measured), 33 feet 2 tenths.

Number of Engines, 2.

Combined Power (estimated horse power), 140.

Names, Residence, and Description of the Owners, and Number of Sixty-fourth Shares held by each Owner.

The West India and Pacific Steam Ship Company, Limited, having its principal place of business at Liverpool, in the county of Lancaster, 64/64.

Custom House, Liverpool, 19 December 1865.

A True Copy of Register of "Barbadian," of Liverpool.

Registry, dated 22 June 1864.

Registrar, J. C. Johnston, Port of Liverpool.

— No. 4. —

The Board of Trade to Mr. *Raffles*.

Board of Trade, Whitehall,
28 December 1865.

Sir,

I AM directed by the Board of Trade to acknowledge the receipt of a copy of the evidence taken at the inquiry held into the loss of the "Barbadian;" also two certificates which accompanied it.

T. S. Raffles, Esq.

I am, &c.
(signed) *T. H. Farrer*.

THE "DUNCAN DUNBAR" AND
"BARBADIENNE."

COPY of the MINUTES of the Evidence taken and
the Report made to the Board of Trade upon
the Loss of the "DUNCAN DUNBAR," and of
CORRESPONDENCE with the Board of Trade con-
sequent thereon: and, the same on the Loss of the
"BARBADIAN."

(*Mr. Henley.*)

*Ordered, by The House of Commons, to be Printed,
19 February 1866.*

56.

Under 4 os.

DUNDEE FRATERNITY OF MASTERS AND SEAMEN.

A B S T R A C T

OF

RETURN to an Address of the Honourable The House of Commons,
dated 22 March 1866 ;—for,

“ COPY of the ACCOUNTS of the SOCIETY known by the Name and Style of ‘ The Fraternity of MASTERS and SEAMEN in *Dundee*,’ Incorporated by Royal Charter, dated the 17th day of September 1774, for the Five Years ending January 1866, as made up and exhibited to the Society, showing the Particulars of the Income, and the Sources from which it is derived; and also the Particulars of the Expenditure, together with a full State of the Funds and Obligations of the said Incorporation.”

BALANCE SHEET, showing INCOME and EXPENDITURE of the Corporation of the “ Fraternity of Masters and Seamen in *Dundee*,” from Christmas 1860 to Christmas 1861.

REVENUE:		£.	s.	d.
1. To Amount of Light Money	- - - - -	1,548	8	6
2. To Amount of Poor's Money	- - - - -	88	16	-
3. To Amount of interest of money on bond, rent of Horn Farm, and feu duty of Sailors' Acres.	- - - - -	295	-	6
4. To Amount of dues of entry	- - - - -	187	15	-
5. To Amount of miscellaneous revenues; consisting of return of income tax, rent of Church seats, charts sold.	- - - - -	40	-	4
	£.	2,160	-	4
EXPENDITURE:		£.	s.	d.
1. By Amount paid Pensioners on roll	- - - - -	1,234	5	6
2. By Amount paid Charities	- - - - -	38	17	-
3. By Amount paid lighthouse and buoy charges, yacht expenses, salaries to officers, &c.	- - - - -	728	12	3
4. By Amount paid miscellaneous charges, including repairs on Horn Farm, &c.	- - - - -	274	10	8½
	£.	2,276	5	5½
ABSTRACT:		£.	s.	d.
Amount of Revenue	- - - - -	2,160	-	4
„ Expenditure	- - - - -	2,276	5	5½
	EXCESS of EXPENDITURE - - - £.	116	5	1½

Trinity House, Dundee, 11 March 1862.

BALANCE SHEET, showing INCOME and EXPENDITURE of the Corporation of the “ Fraternity of Masters and Seamen in *Dundee*,” from Christmas 1861 to Christmas 1862.

REVENUE:		£.	s.	d.
1. To Amount of Light Money	- - - - -	1,687	11	10
2. To Amount of Poor's Money	- - - - -	81	12	-
3. To Amount of interest of money on bond, rent of Horn Farm, and feu duty of Sailors' Acres.	- - - - -	404	12	7
4. To Amount of miscellaneous revenue, consisting of returns of income tax, rent of Church seats, charts sold.	- - - - -	51	11	7
	£.	2,225	8	-
EXPENDITURE:		£.	s.	d.
1. By Amount paid Pensioners on roll	- - - - -	1,307	15	-
2. By Amount paid Charities	- - - - -	19	4	-
3. By Amount paid lighthouse and buoy charges, yacht expenses, salaries to officers, &c.	- - - - -	672	-	7
4. By Amount paid miscellaneous charges, including repairs on Horn Farm	- - - - -	191	4	4
	£.	2,190	13	11
ABSTRACT:		£.	s.	d.
Amount of Revenue	- - - - -	2,225	8	-
„ Expenditure	- - - - -	2,190	13	11
	EXCESS of REVENUE - - - £.	34	14	1

Trinity House, Dundee, 10 March 1863.

BALANCE SHEET, showing INCOME and EXPENDITURE of the Corporation of the "Fraternity of Masters and Seamen in *Dundee*," from Christmas 1864 to Christmas 1865.

REVENUE:										£.	s.	d.
1. To Amount of Light Dues	-	-	-	-	-	-	-	-	-	2,038	5	1
2. To Amount of Poor's Money	-	-	-	-	-	-	-	-	-	66	6	-
3. To Amount of rent of Horn Farm, and feu duty of Sailors' Acres	-	-	-	-	-	-	-	-	-	315	6	2
4. To Amount of entry monies	-	-	-	-	-	-	-	-	-	64	-	-
5. To Amount of Church seats	-	-	-	-	-	-	-	-	-	18	16	10
6. To Amount of miscellaneous receipts	-	-	-	-	-	-	-	-	-	28	10	10
										£.	2,531	4 11
EXPENDITURE:												
1. By Amount paid lighthouse and buoy charges, including sums disbursed for new towers at Buddonness, yacht expenses, salaries to officers, &c.*	-	-	-	-	-	-	-	-	-	2,073	19	2
2. By Amount paid pensions and charities	-	-	-	-	-	-	-	-	-	1,504	3	6
3. By Amount paid miscellaneous charges	-	-	-	-	-	-	-	-	-	63	8	-
4. By Amount remitted Public Works Loan Commissioners, first instalment in repayment of 4,000 l. loan	-	-	-	-	-	-	-	-	-	20	-	-
5. By Amount paid ditto, interest to ditto on loan and remittance	-	-	-	-	-	-	-	-	-	29	14	-
										£.	3,691	4 8
ABSTRACT:												
Amount of Revenue	-	-	-	-	-	-	-	-	-	2,531	4	11
„ Expenditure	-	-	-	-	-	-	-	-	-	3,691	4	8
EXCESS of EXPENDITURE										£.	1,159	19 9

Trinity House, Dundee, 20 March 1866.

* *Note*.—Under this head is included a sum of 1,221 l. 14 s. 2 d., disbursed on account of the new light towers at Buddonness, and which sum was paid from loan of 4,000 l. from Public Works Loan Commissioners. Deducting this extraordinary expenditure, there would be an excess of revenue of 61 l. 14 s. 5 d.

STATEMENT of LOAN by the Corporation of the "Fraternity of Masters and Seamen in *Dundee*" from the Public Works Loan Commissioners; and the Manner in which it has been Applied.

The Corporation in the latter end of the year 1864 arranged with the Public Works Loan Commissioners for a loan of 4,000 l., payable by four instalments of 1,000 l. each. This loan was obtained for the purpose of defraying the cost of two new light towers at Buddonness and the improvement of the lighting apparatus at South Ferry Lights, and is repayable by 50 equal instalments, payable yearly with interest.

										£.	s.	d.
Of this loan the Corporation have already received										3,000	-	-
Applied as under—												
Amount expended on and connected with improvements on South Ferry Lights and in the erection of new light towers at Buddonness, up to 14th March 1866, including solicitor's costs for loan										£.	s.	d.
										1,923	19	3
1866: April 3.—Balance of loan in bank										1,076	-	9
										£. 3,000	-	-
Amount of loan already received as above										3,000	-	-
On 19th October 1865, the first instalment of said loan was repaid, being										20	-	-
1866: 3d April.—BALANCE due from Loan Commissioners at date, } exclusive of interest										£.	2,980	-

**DUNDEE FRATERNITY OF MASTERS
AND SEAMEN.**

ABSTRACT RETURN.

**COPY of the ACCOUNTS of the SOCIETY known by
the Name and Style of "The Fraternity of
Masters and SEAMEN in Dundee," for the Five
Years ending Christmas 1865; &c.**

(Mr. Carnegie.)

***Ordered, by The House of Commons, to be Printed,
20 April 1866.***

199.

Under 1 oz.

"THE EAGLE SPEED."

RETURN to an Order of the Honourable The House of Commons,
dated 16 April 1866 ;—*for.*

COPY "of the REPORT of the COMMISSIONERS appointed to investigate the Circumstances attending the Loss of "The EAGLE SPEED;" together with any PAPERS showing the action of the Indian Government thereupon."

From Captain *H. Howe*, Deputy Master Attendant, to the Junior Secretary to the Government of Bengal ; dated 27 September 1865.

Sir,

WITH reference to your letter No. 5265 of the 2d instant, I have the honour to submit herewith the Report of the Commissioners appointed under Section C., Act I. of 1859, to inquire into the causes of and circumstances attending the loss of the ship "Eagle Speed" off the Roy-Mutlah Sands.

P.S.—Appendix will follow.

INVESTIGATION into the Loss of the Ship "EAGLE SPEED" in the outer Channels of the Mutlah, and into the attendant circumstances connected therewith on the 21st and 22d August 1865.

PRESENT :

A. J. R. Bainbridge, Esq., Officiating Magistrate, 24-Perghs.
Captain H. Howe, Deputy Master Attendant.

1. The "Eagle Speed," a ship of 1,237 tons burden, was chartered in July last by the emigration agent for British Guiana to convey emigrants to Demerara.

2. Having been previously surveyed and passed by the surveyor to Lloyd's as a good insurance risk for cargo, she was, on being tendered for emigrants, specially surveyed by Captain Boon, the Government surveyor for this particular service, and pronounced sound, staunch, and seaworthy, and in every way adapted for the conveyance of emigrants. The number, size, capacity, and condition of the boats were specially examined and reported on, and an additional boat, making up the number to six, was ordered by the surveyor, and provided by the captain of the ship.

3. It should be remarked here that the "Eagle Speed" came to this port from Auckland, New Zealand, to which place she had, under the inspection of the Emigration Commissioners, conveyed passengers from England, and that upon the evidence there is not the smallest doubt regarding her seaworthiness, and the soundness and efficiency of the boats.

4. The "Eagle Speed" had a European crew of 28, exclusive of four topases, all seafaring men, four cooks, a doctor, and compounder.

5. The "Eagle Speed" embarked the emigrants, 487 in number, including women and children, on the 19th August, between 9 and 10 A.M., but did not leave Port Canning until the following morning, the 20th, when she proceeded down the river at a light draught of 17 ft. 6 in. in tow of the tug steamer 196.

A

"Lady

The following witnesses were examined by the Commissioners :

1. Capt. Burbank.
2. Capt. Dando.
3. Capt. Boon.
4. Mr. Hoskins.
5. Dr. Donaldson.
6. Dr. O'Sullivan.
7. Capt. Brinsden.
8. Mr. DeGrouchy.
9. Mills, Topas.
10. Kemp, A. B.
11. McClune, A. B.
12. Mr. Carlisle.
13. Allsum, Topas.
14. Lieut. Maitland.
15. Mr. McMaster.
16. Mr. Conroy.
17. Charles Dermott.
18. W. Maynard, A. B.
19. Mr. Ewart, Pilot.
20. Monoo, Coolie.

"Lady Elgin," and in charge of Mr. Pilot Vardy, who had been specially applied for by the Captain, and by the firm of Messrs. Borradaile, Schiller, and Company.

6. Mr. Hoskins, the Port Master, and Dr. O'Sullivan, the Civil Surgeon of Port Canning, were on board the "Eagle Speed." The former by the desire of the marine authorities to assist by his presence and advice, and the latter to aid the doctor of the ship, who was indisposed. There were also six gentlemen passengers on board the "Lady Elgin."

7. The ship reached Halliday Island the same evening, and anchored for the night. The next morning, at 7 A. M., she was got under weigh, and proceeded seawards in tow of the tug, by the Eastern Channel, with the wind at N. E. and smooth water, expecting to make the Floating Light at about 3 P. M.

8. At about 2 to 2.30 P. M., the wind shifted to the southward, and the sea increased. The ship made little or no headway with the ebb, and it became apparent that the "Lady Elgin" had not power to tow the ship out.

At about 4 P. M., the ship being about one mile and a half distant from the outer or R. R. Buoy, 14 from the Floating Light, and 25 from Halliday Island, one of the towing hawsers parted. The "Lady Elgin" was unable with the remaining hawser to keep the ship's head to the southward, and owing to the sea that was running and to the ship lying in an awkward position right across the tide and sea, great delay took place in passing the hawser afresh.

9. At about 6.30 P. M., just after the hawser had been passed, the ship took the ground, and continued to bump for nearly half an hour. The anchor was immediately let go, but the ship ceasing to strike as the flood made, and the pilot finding, as he states, that the "Lady Elgin" was able to tow the ship against the tide, the chain was slipped, and she continued to tow to the southward until about 9.30 P. M., when the feed pipe of the steamer gave way, and both the ship and the "Lady Elgin" were anchored.

10. The ship's position at this time is shown on the accompanying chart; that is to say she lay about $3\frac{1}{2}$ to 4 miles east of the centre Bulcherry Buoy, $14\frac{1}{2}$ miles from the Floating Light ship, and 16 miles from the nearest land.

11. During the night, the pumps were rigged and manned by the crew and emigrants, but as the water gained steadily on the ship, preparations were made for hoisting out the boats; at 3 A. M. the "Lady Elgin" was signalled, and on her boat coming alongside, information was sent that the ship was in a sinking state, and the "Lady Elgin" was requested to come to her assistance.

12. At daylight the "Lady Elgin" having repaired the feed pipe during the night, steamed to the ship; the captain of the ship hailed her to anchor close under the stern, having previously prepared a Manilla rope for the purpose of establishing communication. No distinct reply was given by the captain of the "Lady Elgin," but she did not come to an anchor.

13. The lifeboat was first lowered, and Mr. Hoskins took command. The boat was passed under the stern, and filled with women and children (lowered into her by the captain and the store-keeper), and these were safely conveyed to the steamer. The boat was towed back towards the ship by the "Lady Elgin," but after several attempts did not succeed in reaching her, owing to the "Lady Elgin" not towing her close enough with the wind and set prevailing. The boat continued occupied under Mr. Hoskins in picking up persons in the water and in saving life, until about 10.30 A. M., when both Mr. Hoskins and the crew being knocked up, went alongside the "Lady Elgin" to be relieved; after Mr. Hoskins and his crew left the boat, she remained alongside the "Lady Elgin" idle, until about 11.30 to 12 A. M., when volunteers were called for to go in her to fetch the captain of the ship.

The boat made a trip to the ship under the chief officer, who had meantime reached the "Lady Elgin" in the ship's gig, and brought off the captain, a midshipman, and some emigrants. On reaching the "Lady Elgin" the crew jumped out of the boat, she stove under the sponsons, and went down afterwards while being towed by the "Lady Elgin."

14. The

14. The second boat lowered was the starboard cutter, of which Mr. Pilot Vardy took charge. The boat took a batch of emigrants to the "Lady Elgin," but arrived alongside with her bows stove in, and was sent adrift.

15. The longboat was got out by tackles in the usual way, lowered safely into the water, and passed astern, the second officer taking command. The boat unfortunately got foul under the stern, and was stove under the ship's quarter through the mismanagement of the second officer. The boat was still serviceable, however, and conveyed a number of emigrants to the "Lady Elgin." The crew would neither remain in the boat nor return, and she was made fast alongside; subsequently the "Lady Elgin" steamed ahead full power; the boat's thwart carried away, she sheared under the sponsons, was smashed, and went down alongside.

16. After the longboat left the ship, the gig was launched, but in getting her over the stern one of the stanchions made a hole in her bottom. The chief officer took command, and several of the European crew and some emigrants reached the "Lady Elgin" in her, after which she swamped alongside.

17. After getting the longboat and gig away, the captain ordered the boatswain to launch the fifth boat which was on the skids. In attempting to do this the boat got jammed, and the boatswain immediately deserted the ship, and swam to the "Lady Elgin."

18. No attempt was made to launch the sixth and last boat.

19. During the whole of the time that the boats were employed in passing to the "Lady Elgin," she was either drifting, or under steam, at a distance varying from $1\frac{1}{2}$ miles to half a ship's length from the ship. The same time was occupied in throwing overboard all the lumber on the deck of the ship, under the superintendence of the captain, for the emigrants to get upon and float to the "Lady Elgin."

The "Lady Elgin," and the lifeboat under Mr. Hoskins, were engaged for a considerable period in intercepting and picking up persons, both crew and emigrants, so drifting from the ship, but, as was to be expected under the circumstances, many were passed by and perished.

20. About mid-day the ship's lifeboat came from the "Lady Elgin" under the ship's chief officer, with a message from Captain Heath (Commander of the "Lady Elgin"), to the effect that if the Captain (Brinsden) did not then come off, the "Lady Elgin" would not wait for him.

Some difficulty was found in getting a crew for this boat, and the chief officer was obliged to offer a reward before the men went into her.

A crew was obtained, and among them was one of the men who had previously worked well in her under Mr. Hoskins, William Maynard.

21. The "Lady Elgin" had previously hailed to all hands on board the ship to jump overboard, and showed a board with writing addressed to the captain, as to the words of which there is some conflict.

22. All the Europeans at this time had left the ship except the Doctor (Donaldson), a midshipman, and a sick sailor (Kemp).

Under these circumstances, the captains, after going below to see how high the water was, got into the lifeboat over the stern and left the ship. The midshipman and some emigrants were also taken off in the boat, but she was not full.

23. On reaching the "Lady Elgin," the captain, who had on a cork jacket, was assisted on board by two gentlemen passengers, Messrs. Carlisle and Maitland; he expressed a wish to lie down, and going below, without further remark, went to sleep on the stern locker.

24. Mr. Hoskins having by this time rested, asked Captain Heath to lend him the boat belonging to the "Lady Elgin," which was in consequence, and now for the first time, lowered. Some difficulty was found in getting a crew. Maynard, however, again came forward, and three others were shamed into going.

The boat started about 1 P.M., and on reaching the ship Mr Hoskins called to the doctor to jump in, but the emigrants crowded down the ladder over his body and filled the boat before he could get into her. Mr. Hoskins transferred these emigrants to the "Lady Elgin" and returned to the ship.

The doctor and a number of emigrants then jumped overboard, and were picked up and conveyed to the "Lady Elgin."

In getting the doctor up the side, one of the hanging tackles was clumsily allowed to foul one of the thwarts of the boat, and tear the side out, and the boat was rendered useless in consequence.

25. When the boat left the ship on this last occasion, a number of emigrants and the sick European sailor were left hanging under the stern. The four topases were still on board.

One of the topases was seen to descend and fasten a line round the European, by which he was hauled on deck. The topases do not appear to have tried to get into this last boat, thinking that she would return, and relying on the doctor's promise to that effect.

26. After the boat last mentioned was stove, and had been hoisted up, the "Lady Elgin" steamed close to the ship, and picked up such of the emigrants as jumped overboard and reached her, but the topases were not hailed to launch the ship's two remaining boats, and no attempt was made at that time to launch either of them; about an hour was occupied in this way.

27. A consultation was then held on board the "Lady Elgin," in which Mr. Hoskins, Captain Heath, the mate of the "Lady Elgin," Mr. Vardy, and the six gentlemen passengers took part; the ship's officers were not present. Captain Heath said that the coal was only sufficient to take the "Lady Elgin" back to Canning, and that the weather looked bad; it seems doubtful whether the damaged feed pipe was mentioned; however, it was agreed *nem. con.* to return to Port Canning and send assistance to the wreck. Mr. Hoskins took the leading part at this consultation.

28. Accordingly, at about 2 P.M. the "Lady Elgin" left the ship, and steamed in the direction of the Floating Light to ascertain her position, of which no one on board was aware.

When she left, there were two large boats on her paddle-boxes; these boats covered the paddles, and were either bolted down or secured by a cantpiece; no suggestion or attempt to launch these boats was made.

28½. The masts of the Floating Light were shortly afterwards sighted, and the "Lady Elgin's" head being put about, she passed the ship in going up channel at about three miles distance, and anchored at Halliday Island at 6.30 P.M.

29. When the "Lady Elgin" was abreast of the ship on the way up channel, the ship captain was about on deck; he made no formal protest to Captain Heath against leaving the ship.

30. On her way up the river the next morning, the "Lady Elgin" overtook a boat proceeding up; this boat turned out to be the fifth boat of the ship before described as having got jammed in the attempt to launch her; the boat contained the four topases, the sick European sailor (Kemp) 32 male and one female emigrants; she had no rudder, mast or sails, but there were three oars, two of which were broken; she was proceeding up under a blanket rigged as a sail on one of the oars, and was steered with another. This boat was 22 feet long and clinker built. The topases launched her without difficulty after the "Lady Elgin" left the ship; in lowering her the after-tackle carried away and she partially filled, but the topases baled her out alongside, and she was passed safely under the stern; whilst fast astern the rope broke, and she went adrift with two topases (Mills and Alsun) and some emigrants in her; there were no appliances in the boat except a broken oar. The topases rigged an emigrant's wrapper on this oar by way of shift for a sail, and with this and a piece of the stern sheets, torn from the bottom and used as a rudder, the boat regained the ship in about an hour; the boat was brought alongside under the mizen chains, two more oars (one of them broken), two blankets, a compass, lantern, cigars, and some salt meat were put into her, and after taking in the other two topases and the emigrants, she shoved off. With this load and with these appliances, the boat weathered the night, and some hours after leaving the ship, having made out a light (probably a light from the "Lady Elgin" anchored at Halliday Island), she got fairly into the river.

31. This boat left the ship at about 6 P.M., and at that time the water was up to the combings of the hatchways. It is in evidence that the ship did not founder

founder until about 8 A.M. the following morning. This depends on the statement of one of three emigrants, two men and one woman, who floated ashore on a plank, and were recently found in the jungle, some 50 miles inland, well nigh starved.

32. The ship was totally lost; some emigrants who floated ashore on pieces of wreck after the ship foundered, have been found in the jungle and rescued; the total loss of life has been 262 souls; none of the Europeans are missing.

33. These being the facts of the case as they are proved in evidence, we now proceed to point out what, in our opinion, was the cause of the catastrophe, and wherein the responsible persons connected with the ship failed in their duty.

34. Mr. Pilot Vardy having already stood his trial before the proper tribunal, and been condemned for the actual loss of the ship, which was under his pilot age charge, will not be noticed in the remarks to follow, except incidentally.

35. The first two subjects which require our notice are the numerical and physical strength of the crew, and the competency of the tug employed to take the ship out.

36. There appears to be no regulation prescribing the number of the crew which emigrant ships shall carry.

The practice appears to be regulated by instructions issued by the Government Transport Agent, dated 10th December 1864, to the effect that such ships shall have as many men on their articles as they had when they cleared from England.

In this case the crew list handed in by the captain shows a complement of 28, exclusive of four topases, all seafaring men, and four cooks, who are not borne on the ship's articles, besides the doctor and a compounder.

On the point of their physical condition, there is some conflict of evidence; Dr. Donaldson says four or five appeared to be unhealthy and sick.

Dr. O'Sullivan, who for the time was more directly in charge, and who saw and prescribed for the sick, says there was nothing the matter with any of them which a few days at sea would not remedy, and that with the exception of one or two who required trifling medical treatment, the whole crew was sound, though most of them were recovering from the effects of too much liquor.

The crew were mustered by the chief officer after leaving Halliday Island. He says every man came aft, and that only two or three looked weakly. On the other hand, it seems pretty clear that the captain, although well, was not strong, having but recently recovered from sickness.

The chief officer was altogether incapacitated by sickness. The doctor was sick with pleurisy and a broken rib, and there is little doubt that on leaving Halliday Island not more than half the able seamen were at work.

It will be well to say at once here, that we consider the ship's crew was numerically sufficient, and that we are not of opinion that the loss of the ship is in any way attributable to their physical condition; neither do we think that, had the ship got to sea, she would, in ordinary circumstances, have been thereby endangered. But it is obvious that under extraordinary circumstances the lives of the emigrants were grievously imperilled by the physical condition of the men on whom those lives depended. In the emergency which happened, failing the captain and chief officer (said to be a first-rate man when well), the emigrants were lost men.

37. In this case the officers and crew were not mustered and inspected before the emigrants embarked, or the ship hauled out of moorings.

The question of course arises, on whom the responsibility of seeing that the crew is efficient lies.

The responsibility of the captain and pilot cannot be contested.

The Emigration Agent and the Protector of Emigrants both repudiate any responsibility in the matter. The Emigration Agent says, "I had nothing to do with the crew. I thought they were all correct and right." The Protector says, "I don't understand that my duties include any responsibility as to the number and capacity of the crew; there is a rule, No. 19, providing for that duty; I received the List No. 6, ordered by the above rule from the Commander. I will put in the return. It is not part of my duty to muster the crew and see that the provisions of Rule 19 are complied with; I knew that there

were 26 men on board, but I did not know their rating or condition, with the exception that the captain informed me that he had the same number he came out from England with, under engagement with the Emigration Commissioners; and again, further on, "the captain gave me to understand that he meant the same strength."

On referring to the Rules for the guidance of *all* persons concerned in emigration, we find it laid down in Rules 14 and 15, that commanders are required to have crew lists prepared according to a given form, and to lodge them three days before the embarkation of the emigrants in the Protector's office; and in Rule 19, "That commanders are required to muster their crew in the presence of the pilot previous to the embarkation of the emigrants, in order that their efficiency may be ascertained;" and again, in the charter party or agreement executed by the Emigration Agent, Clause 5, provides as follows:—"The master, officers, and crew shall be approved by the said Emigration Agent." Under these circumstances when the Emigration Agent, Mr. Hunt Marriott, inspected the ship on the 19th, we think he failed in his duty in not seeing that the provisions of Rule 19 were duly complied with.

The charter party, in Clauses 5, 17, 14, and 18, provides further, that three life-buoys *shall* be provided; that the emigration agent *shall* have every facility to inspect the fitments, &c.; that one topas or mehter at the least *shall* be provided for every hundred or fractional portion of a hundred emigrants, and that the ship shall be towed to sea by a competent steam-tug.

Five life-buoys were provided in this case, but it is in evidence that these buoys were badly covered, and that owing to the water penetrating, they after a time soaked and went to pieces. The number of emigrants embarked was equal to 425 adults; there ought, therefore, to have been five in place of four topases. The steam-tug is shown in evidence to have been incompetent to tow a ship of the size of the "Eagle Speed" under the circumstances in which she was placed, but as the question of her employment appears to have been referred to, and decided by the Government of Bengal in the affirmative, no remark is necessary, further than that Mr. Pilot Vardy certified that he considered her a first-class steamer for the Mutlah, and that he preferred her to any other on account of the experience of her commander.

38. We now pass on to the Protector of Emigrants.

In the rules provided for the guidance of the Protector of Emigrants, we find it laid down in Rule 5 that it is his duty to see "that the ship is supplied with all necessaries for the voyage;" in Rule 6, that the ship is "in every way qualified to carry emigrants," and in Rules 14, 15, and 19 (which are general rules), as already stated above. Reading the above rules, together with Act XIII. of 1864, section 46, clause 5, and sections 53 and 55, we are of opinion that it was also the duty of the Protector (Captain Burbank) to see that the pilot and commander duly complied with the provisions of Rule 19.

We may add that section 3 of the standing rules for the guidance of pilots in the Hooghly and Mutlah, of which both the Emigration Agent and Protector must be taken to be officially cognisant, directs a pilot to decline moving any ship if he has reason to think that her crew is so weak or otherwise so inefficient as to be likely to cause unusual detention in taking her to sea.

We therefore think the Protector quite in error as to the scope of his duty in considering it not incumbent upon him to assure himself of the efficiency, physical as well as numerical, of the crew.

We also think it right to observe that the Protector by his own showing took the captain's bare word for the fact that the number of the crew was up to the required standard, which appears to us hardly to argue a correct appreciation of the grave responsibility which attaches to the careful discharge of his office.

39. The next point in the narrative which it appears to us necessary to notice, occurred at 4 P.M., on Monday the 21st, when one of the towing hawsters parted.

It had been for some time apparent that the "Lady Elgin," even with the ebb, was barely able to tow the ship against the wind and sea the flood was about to make, and this, coupled with the above circumstance, was sufficient reason for turning back.

After the hawser parted, there were two courses open, either to run back
into

into smoother water and anchor for the night, or to anchor on the spot rather than drift on the sand.

The captain proposed to anchor, but yielded his judgment to the greater local knowledge of the pilot. The reason assigned for not running back was, that there was not sufficient daylight. This was contrary to the fact; the distance to Halliday Island was only 25 miles, and to safe anchorage at the Middle Ground buoy less than 15, while the distance to the Ring buoy, where the anchorage is declared to be as good as at Halliday Island, was only 18½ miles. There was a fair wind, a spring flood tide, and two and a half hours of daylight. The truth appears to have been that the pilot hoped to get to sea, and elected to run the risk. The ship was about a mile to a mile and a half from the Roy Mutlah sand, and she was allowed to lie broadside on in the trough of the sea for two hours, with a set driving on to the sand. The inevitable consequence of that was, that she must go on the sand if no counteracting manœuvre was had recourse to; she did go on the sand in consequence, and we entertain no doubt that the loss of the ship is attributable to the inattention and neglect exhibited on this point, and to this only.

40. While the ship was drifting in this position, there was no one in the chains, and the lead was not kept going. This was a grievous omission, and one for which the captain as well as the pilot is gravely responsible, for although he did not know the proximity of the shoal and the existence of the set, still the breakers had been seen all the way down, and it is the duty of the captain to see that the leadsman is at his post. "The bottom throughout the channels of the Mutlah is mud, the sands exceedingly hard, and the lead an excellent and safe guide towards them;" had the lead been carefully kept going and watched, the approach of the ship towards the Roy Mutlah sand would have been at once discovered.

41. After the ship took the ground, the course adopted was perhaps the only one possible under the circumstances; and during the night all that could be done to keep the leak under, and to get the boats ready, was done on board the ship.

42. We pass on to daylight on Tuesday the 22d, when the "Lady Elgin" got up her anchor and steamed to the ship in answer to her signals and message of distress. The captain of the "Lady Elgin" was hailed to anchor under the ship's stern. And here we must express our decided opinion that it was the obvious and bounden duty of the captain of the "Lady Elgin" at once to anchor, either under the quarter or the stern of the ship, as close as was consistent with safety. There was no valid reason why he should not do so; he does not himself assert that there was. In his evidence before the Marine Court he only says, "I did not anchor near the 'Eagle Speed' on the morning of the 22d, but kept steaming backwards and forwards. I don't *think* lines could have been passed to the steamer from the ship, even if the latter had anchored at a safe distance from her bows, as both vessels were rolling heavily."

The consequence of this steaming backwards and forwards was, that the "Lady Elgin," as already stated, was sometimes a mile and a half from the ship, and on one occasion not near her for an hour and a half. The lifeboat could not fetch the ship, and eventually made but one trip; fuel was needlessly expended, and above all the precious hours of daylight slipped away, until the question became possible whether the "Lady Elgin" could remain out. The results on board the ship were, as might be expected, deplorable. Panic, hurry; lumber thrown overboard, and the crew and emigrants jumping into the sea and drifting in every direction, all of whom it was of course vain for the "Lady Elgin" and the lifeboat to hope to pick up.

There is abundant evidence, both in the facts and the sworn depositions, to show beyond doubt, that it was not only possible and safe, but incumbent upon the "Lady Elgin" to anchor close to the ship.

In the first place she had but just purchased her anchor without difficulty, and come from her night's anchorage. There was no sea on in which even a fair-weather boat, *e.g.* the gig, could not live and have continued to pass to and fro had she not been stove; and none in which, as was subsequently proved, a ship's cutter heavily laden could not live without proper rudder, oars, or sails. The captain of the ship, the chief officer, Mr. Hoskins, the chief

mate of the "Lady Elgin" and those of the crew whose opinion has been asked, are unanimous that it was feasible and proper; and most of them swear that had the "Lady Elgin" remained stationary but three hours close to the ship, every soul could have been saved. We are entirely of the same opinion; we think that boats might have been pulled to and fro by a line between the vessels, or, failing boats, that the emigrants who could not swim might even have been swung on board from the yards with ease if the "Lady Elgin" had anchored within proper distance alongside; at any rate whether she had anchored alongside or astern, the boats could have gone more easily between the vessels, if she had only anchored. The fact of the "Lady Elgin" being close by, and stationary, would have inspired confidence on board the ship, and gone far to obviate, if not entirely to prevent the panic and confusion which took place.

We attribute the deplorable loss of life which occurred mainly to the practical refusal of Captain Heath to anchor close to the ship in a proper position.

43. We must point out also that Captain Heath during this time showed himself deplorably deficient as a commander in other respects. (1.) In allowing people on board his vessel to hail those on the ship to jump overboard, and a board to be shown, he, Captain Heath, not knowing [if in fact he did not know] what was written on it; (2.) in sending the message which he did to the captain of the ship; (3.) in the want of management, due care, and non-use of the boats.

While the "Lady Elgin" and the ship's lifeboat were picking up emigrants from floating wreck, the "Lady Elgin's" boat was not apparently thought of, much less lowered, though on one occasion 14 emigrants passed by on a hencoop, while the "Lady Elgin" and the boat, it is presumed, were occupied with others; again, the ship's lifeboat was suffered to lie idle alongside the "Lady Elgin" from about 10.30 to 12 A.M.

The longboat after coming alongside and being made fast to the "Lady Elgin," was towed under by her while still in serviceable condition, and the lifeboat after being stove, was towed astern until she went down, though it is in evidence that she might have been repaired in a quarter of an hour. Eventually the "Lady Elgin's" boat was lowered only when expressly asked for by Mr. Hoskins, and no attempt was made to launch the paddle-box boats at all; these boats were each 29 feet 6 in. long, with 10 feet beam, and built of mahogany. They were offered for sale to the Marine Department by Messrs. Borradaile, Schiller and Co., in December 1864, on the part of Captain Heath; they were in serviceable condition, and it is in evidence that it was possible to launch them by pitching them overboard.

44. We now pass on to notice the conduct of the ship's officers. The captain was placed no doubt in a difficult and trying position by the behaviour of the "Lady Elgin," and the uselessness of his chief officer by reason of sickness; but we think he showed throughout this stage of the occurrence a deplorable want of the cool judgment and resources of a commander.

As soon as it was resolved to have recourse to the boats to save the emigrants, the crew and officers ought to have been mustered.

The captain was aware, or ought to have been so, that the ship was not likely to sink for hours. The crew should have been told this, the captain's intention to stand by the ship announced, their posts and duties assigned, and arrangements made with Mr. Hoskins to use all his authority and power of persuasion to make Captain Heath take up his proper station.

In place of all this the captain worked with his own hands, thereby frightening others, ordered lumber to be thrown overboard and the emigrants to save themselves upon it, put on a cork jacket himself, and allowed his chief officer and the European crew to do the like, and to appropriate the life-buoys provided for the emigrants; and after being deserted by the European part of his crew and officers, except the doctor (Donaldson) and a midshipman, he left the ship under the circumstances before stated.

It is due to the captain to give his explanation in his own words:

"Under these circumstances I got into the boat, believing that the steamer would leave, but with the intention of speaking to the captain when I got on board; but as soon as I got on board I felt so exhausted from exposure and from previous fever, five times, that I found myself totally incapable of speaking to any one on any subject at the time; I had no strength to protest against the

desertion

desertion by the steamer; I was nearly senseless. Mr. Carlisle and Lieutenant Maitland, and Mr. Vardy, saw the state I was in; the two former helped me on board. I remained in this state about an hour and a half, as near as I can remember, and recovered my senses and came on deck."

On the 13th September being re-called, he again stated as follows:—

"If I had remained in the ship I should of course have cut away the masts to form rafts, but I had made up my mind that the steamer would remain until all hands were saved. Had the steamer left me on board and deserted me, I could have cut away the masts, watching when she came broadside to the swell; I could have cut away the upper ones, at any rate. I could have cut away also the lanyards of the lower rigging, and of course the lower masts would have gone of themselves in the roll of the sea."

After making every allowance, we regret to say we are of opinion that the captain failed in his duty, especially in leaving the ship.

At the time he believed, and rightly believed, that the ship would live four or five hours, every resource had not been exhausted. There were still two boats on board, and four Topases to launch them, not to speak of the crew in the boat which came for him, who might have been ordered on board to assist.

The masts might have been cut away, and would have at once formed rafts sufficient to have supported all the emigrants, whence the "Lady Elgin" might have picked them off, or left them while she called up the Floating Light Ship. It is not the fact that the captain was so prostrated when he reached the "Lady Elgin" that he was incapable of expressing his wishes. He did not, however, protest against Captain Heath's leaving the ship, or seek an interview with him.

45. The chief officer of the ship did little or nothing, but he is stated by all to have been very sick and weak, and he did rouse himself to save the captain.

46. The doctor did nothing. He was sick with an attack of pleurisy, and had a broken rib, and had been immersed in the sea; there can be no doubt, however, that he ought to have made a formal and strenuous protest against leaving the emigrants, and that the explanation which he offers for omitting to do so, viz., that it was no use protesting when he knew it was predetermined to go, is altogether unsatisfactory.

47. The second officer was sober, though suffering from the effects of liquor; there appears to be no palliation for the conduct of this man. After reaching the "Lady Elgin" in the long boat, which was partially stove through his mismanagement, as above mentioned, he and the crew jumped out of and abandoned her, though still serviceable, on the plea of exhaustion, and would not return. It is in evidence that he wanted to go up the "Lady Elgin's" side before the emigrants. He remained on board the "Lady Elgin" all the morning until volunteers were called for to fetch the captain, and then instead of coming forward, set the men an example of skulking. Eventually he went in the boat, but not until a reward had been offered by the chief officer.

48. The Boatswain: This man had jammed his finger in giving the ship chain, and was on the day previous, in a great measure, off duty.

The captain of the ship has sworn that he ordered this man to launch the fifth boat of the ship (which got jammed,) and that he deserted the ship contrary to his orders and swam to the "Lady Elgin." After saving his own life, he did nothing. We think there is, *prima facie*, a case against this man, and also against the second officer, under section 79 of Act I. of 1859.

49. The European crew generally, with the exception of William Maynard and William Wilson, behaved disgracefully, but it must be remembered that where there is no method or discipline, and the officers do not act like officers and seamen, the mass of the men are not likely to do their duty. The chief officer deposes that the crew, generally, refused point blank to obey his order to man the life-boat for the captain, but the weight of evidence is against any order, as such, having been given; they appear to have been only asked to go. Where there is no order, there cannot, as a matter of discipline, be disobedience, consequently we think the Act will not touch the crew.

50. It only remains to make a few short observations on what took place when the "Lady Elgin" left the ship, and on the conduct of Mr. Hoskins.

We feel bound to say at the outset that the calling in the aid of the passengers at the consultation was a farce, and, in our opinion, very like an attempt to bolster up what the seamen felt to be unjustifiable, by the support of those who were not competent to form a just opinion, and to whom no feasible alternatives were suggested. That no officer of the ship was consulted, and that a decision was come to and acted on without express inquiry from the captain as to the real condition of the ship, was highly culpable; it is a matter of some surprise that the impropriety of this did not strike some of the passengers. The reasons that were then, or which have been afterwards, mooted for leaving the ship are—(1) short coal; (2) threatening weather; (3) an injured feed pipe; (4) the prudence of securing the lives of those on board.

These reasons, in our opinion, were groundless. The "Lady Elgin" would have had ample coal to take her to the nearest land, whence she could have sent for assistance. The fact of the ship's cutter, in her wretched plight and laden condition, having weathered the night without difficulty, disposes, in our opinion, of the objection of weather in and above the position of the wreck, and offers a significant commentary on the conduct of those who urged it. If further evidence be necessary, the captain of the Floating Light Ship has deposed that with the wind and sea there were at the Sandheads during the night in question, the "Lady Elgin" might have ridden at anchor without jeopardy. The feed pipe was shown to demonstration to have been in serviceable order by the subsequent action of the "Lady Elgin." She had room for all the emigrants; she was originally a man-of-war and an ocean-going vessel, and is known, in that capacity, to have been a good sea boat, and to have ridden out many a gale.

We are informed that she formerly carried four guns on her deck, 18-pounders, and that she has often carried 260 European supernumeraries for the fleet, &c., about the English Channel in safety in all weathers. If so, we think this an amount of top weight fully equal to 400 native emigrants.

That being so, we can only attribute the decision arrived at, and carried out, to a want of judgment, resource, and ability to meet emergency, amounting to incompetency to command, on the part of all the seafaring men in authority, who endorsed it. We are confirmed in this conclusion by the additional facts that, whereas it was known that the Floating Light must be within the visual range of a blue light efficiently burnt, no one suggested burning such blue lights continuously throughout the night to attract her attention; nor when she was actually ascertained by the "Lady Elgin" to be within 14 or 15 miles, did it occur to any one to give the alarm and call her up. No expedient beyond working in the boats and returning to Canning seems to have suggested itself to any one. The chief mate of the "Lady Elgin," by the way, states that on one occasion he (late in the day) proposed to Mr. Vardy trying to run the ship up under sail, but desisted, contrary to his own opinion, on Mr. Vardy saying that it was impossible, the ship being water-logged.

There can be no question that the ship might have been run up and beached on Halliday Island if the cable had been slipped at daylight on the 22nd; it was then spring flood tide, with a strong fair wind, plenty of water in the Channel, and the ship's draught was not more than 19 feet, for when the captain left her 6½ hours afterward, she drew, according to his evidence, 22 feet; running before the wind and sea, there would have been but little scend, and the ship could with ease have been run up under all sail in four or five hours, when every soul would have been saved. It would appear that no look-out, with a view to ascertain the ship's position, was kept during the night, for though it is in evidence that the Floating Light, distant 14 to 15 miles, was seen, it was not reported; and so the next day also, although the centre Bulcherry Buoy was distant 3½ miles only, at which distance, it is proved in evidence, that it ought, in the then state of the atmosphere, to have been easily visible, it was not picked up.

51. Briefly, the whole occurrence throughout is characterised by a deplorable absence of all controlling judgment, a want of resource, and fear of responsibility. These remarks include Mr. Hoskins; he, like the captain of the ship, worked himself, instead of effectively directing the efforts of others. In the position he held, and under the circumstances, he ought to have assumed the responsibility, insisted upon Captain Heath anchoring the "Lady Elgin" close to the

the ship, and preventing him at all hazard from deserting her; whereas the only occasion on which he seems to have asserted his position was unfortunately at the consultation when he led in advising return to Port Canning for assistance, it being at that time generally supposed that the ship would not live two hours.

There is this to be said in excuse for Mr. Hoskins, that he had exhausted himself by previous exposure to the sun, and by great physical exertion in the boats to save life; and as he himself states, he was probably not himself from fatigue; we desire to add that, while failing in judgment and resource, we think Mr. Hoskins showed himself, in respect of his personal exertions to save life, to be a courageous and active sailor.

52. Here we feel obliged to revert to Captain Brinsden. When the "Lady Elgin" was abreast the ship on her return, he was on deck and recovered from his temporary prostration; he admits that he was all along fully aware how wrong it was for the "Lady Elgin" to leave; he also admits that he believed the ship, at the time he left her, had still some four or five hours to live, yet what does his remonstrance—if it can be called such—amount to? We quote his own words: "About this time I said to the captain of the steamer, This is a fearful thing to leave all these poor creatures on the wreck; and he told me his reasons, viz., want of fuel, feed pipe damaged, threatening weather, want of daylight to get back to Halliday Island, and the right to save all those already on board. His reasons did not satisfy me either in my mind or my feelings, although concurred in by all on board; but I made no formal protest, and the vessel proceeded on to her anchorage under Halliday Island, where she arrived before dark. I all along considered that the steamer was wrong to go away and leave the ship, and that she was not justified in doing so by any necessity. I am sure we should have got every soul out of the 'Eagle Speed' if the steamer had stopped another two hours." This speaks for itself; no one made any other remonstrance, and with this 329 souls were left to perish.

53. Before closing this report we deem it our duty to draw attention to the evidence which we have thought it necessary to take regarding lighting and buoying the Mutlah River. Upon that evidence, and the facts before us, we have to express our very decided opinion that the Mutlah is not sufficiently lighted for the purposes of safe navigation. An inner floating light is indispensable; without such a light there is no guide to lead an inward bound ship up to a safe anchorage after dark, and we think that if such a light is not established, the port ought not to remain open with the sanction of Government.

We are also of opinion that the outer Floating Light ought to burn a blue light instead of rockets only. The mouths of the Mutlah and Hooghly are 30 miles apart, east and west, and the lead is a sufficient guide to prevent any dangerous mistakes.

With regard to the present buoying of the Mutlah, we think the channel safe as at present buoyed, but susceptible of improvement. The two outer buoys should be first class buoys. The ring buoy ought to be a second class instead of a third class buoy, as it is at present, and all the third class buoys in the outer channels should be second class; an additional second class buoy is also required between the Spit buoy and the lower Eastern Bulcherry buoy.

There is one other important point connected with the navigation of the Mutlah which demands notice, *i.e.*, the number and qualifications of the pilots; formerly there were six, but under orders of Government, Mr. Secretary Bayley's letter, No. 1915, dated 15 April 1864, the number was reduced to four, and the pay increased to 150 rupees per mensem each.

The candidate for the vacancy made by Mr. Pilot Wise, lost in the ship "P. C. Kinch," is necessarily on probation, and one of the remaining three is employed at the port in hauling ships in and out of the moorings, so that practically there are but two pilots as a rule, though the port pilot, on an emergency, can be sent down the river.

The list does not provide for casualties; and taking into consideration the fact that, during the current year there have been as many as ten ships at one time in the port, we are of opinion that the number of pilots should not be less than the original number, six, all of whom should be kept to their legitimate work, and an assistant Harbour master engaged to moor and unmoor ships, as provided in the Budget Estimate.

With regard to qualifications, we submit that the pay, reduced as it is by the deduction of mess money while on board the Floating Light at the Sandheads, is insufficient to induce good men to enter the service. We think Government might pay the mess money while at the Sandheads only. Two pilots would be constantly at the Sandheads; and the average cost to Government for mess money would be 120 rupees a month only, while the relief and encouragement to the pilots would be considerable.

54. The conclusions we arrive at are shortly—

That the emigration agent and the protector failed in their duty in neglecting to see that the pilot and commander did theirs, and the former also in not providing proper life-buoys and sufficient Topases. It may be a question whether either of them ought to have let the ship go to sea at all with a doctor sick with pleurisy and a broken rib, a fact known to both of them.

That the ship was lost owing to her being allowed to drift helplessly broadside on in the trough of the sea, with a set on the sand under her lee, distant about a mile and half, for two hours.

That Captain Brinsden erred in not keeping a man in the chains, and that he erred deplorably in exhausting himself by personal exertion instead of directing others; in not insisting upon Mr. Hoskins using his influence to make the steamer anchor, by which means the boats could have saved all the emigrants with ease; in leaving the ship as he did, and having done so in not protesting against her abandonment; in not insisting on an attempt being made to launch the paddle-box boats; in not cutting away the masts, and also in not having slipped his chain and ordered the pilot to run the ship up at daylight on the 22d, whereby she might have been beached on Halliday Island.

That Doctor Donaldson erred deplorably in not formally protesting against the abandonment of the emigrants who were under his special charge.

That the second officer and the boatswain behaved disgracefully.

That the crew generally behaved badly.

That the loss of life is mainly owing to the steamer not anchoring, for which Captain Heath is to blame.

That Captain Brinsden and Captain Heath displayed a deplorable want of the qualities of command.

That Mr. Hoskins showed deplorable want of judgment in not using his influence to make the steamer anchor, and in proposing the abandonment of the ship.

That the Mutlah River is imperfectly lighted, the buoys capable of improvement, and that the number and remuneration of the pilots on the Mutlah is insufficient.

We beg to bring William Maynard and William Wilson, able seamen, and the four Topases, to notice, as men who did their duty under most trying circumstances.

(signed) *A. J. R. Bainbridge.*
H. Howe.

Appendix (A).

REPORT of Survey on the Ship "Eagle Speed," bound to *Demerara*.

"Eagle Speed."		Name of the Ship.	
1,297 tons.		Tonnage.	
United States, 1857.		When and Where Built.	
Classed 3-3d <i>veritas</i> .		Classification (if any).	
May 1864. London.		Where and When last in Dry Dock.	
May 1864, and re-classed.		When last Coppered.	
Three hawsers; 13 inches, 9 inches, 7 inches.		Hawsers (Size and Length).	
		Ground Tackle.	
		Chain Cable.	
		Boats.	
		Repairs now effected (if any).	
		Superficies of Passengers' Deck.	
		Masts, Yards, Rigging, and Equipment.	
		Between Decks.	
		Total Measurement of Apartments for Light and Air, exclusive of Side Scuttles.	
		Number and Size of Side Scuttles.	
		Space on Upper Deck or Poop for Exercise.	
		Space divided off as a Hospital.	
		State of Privies.	
		State of Cooking Apparatus.	
		State of Fire Engine.	

* To be fitted with another boat, dimensions as above.

I, the undersigned surveyor, duly directed by the master attendant, under and for the purposes of the Emigration Act, No XIII. of 1864, hereby certify that I have carefully surveyed the above-mentioned ship, and have also examined her masts, yards, rigging, sails, pumps, ground tackle, and boats. I find that her hull is sound, tight, staunch, and firm in the fastenings; that her passengers' deck is not less than one inch and a half in thickness, and properly supported by beams of adequate strength, forming part of the permanent structure of the ship; and that her boats, pumps, and other equipments are suitable and sufficient for a vessel of her tonnage, and are in a sound and efficient condition; and, finally, I hereby report that the said ship is, in my opinion, seaworthy and fit in all respects for the carriage of passengers on her intended voyage to Demerara.

Dated 27th day of July 1865.

S. G. Boon,
Assistant Master Attendant.

Appendix (G).

LIST OF CREW.

James Brinsden, commander	-	-	-	1	Peter Richardson	-	A. B. in Calcutta	-	15
Thomas DeGrouchy, chief officer	-	-	-	2	James McCartness	-	„ - ditto	-	16
Henry Mathews, second chief officer	-	-	-	3	Thomas Nutson	-	„ - ditto	-	17
Thomas Lockart, boatswain	-	-	-	4	John Thomas	-	O. S. - ditto	-	18
William Borth, carpenter	-	-	-	5	Augustus Rigston	-	A. B. - ditto	-	19
William Ansell, engineer	-	-	-	6	William Maynard	-	„ - ditto	-	20
Philip McCormick, cook	-	-	-	7	Edward Kemple	-	„ - ditto	-	21
William Kemp	-	A. B. during the	voyage - }	8	James Wilson	-	„ - ditto	-	22
John Jefferson	-	„ - ditto			-	9	John Smith	-	„ - ditto
James McLune	-	„ in Calcutta	-	10	Augustus Spugg	-	„ - ditto	-	24
Robert Smith	-	„ - ditto	-	11	Alfred Reynolds, steward	-	ditto	-	25
James Newgent	-	„ - ditto	-	12	Charles Dermot, storekeeper	-	ditto	-	26
Michali Shaw	-	„ - ditto	-	13	Charles Hallahan, O. S.	-	-	-	27
Charles Wilson	-	„ - ditto	-	14	James Williams, apprentice	-	-	-	28

Besides four topases and four cooks, doctor, and compounder.

From *S. C. Bayley, Esq.*, Officiating Secretary to the Government of Bengal, to Messrs. *Sandes, Stack, Collis, & Mirfield* (No. 5659); dated 6 October 1865.

Gentlemen,

IN the absence of the Solicitor to Government the Lieutenant Governor directs me to forward to your firm the accompanying copy of a report regarding the loss of the emigrant ship "Eagle Speed" in the outer channels of the Mutlah; and I am to request that you will be good enough to obtain and submit, for the information of his honour, the opinion of the Advocate General, or, in his absence, that of any other leading counsel in Calcutta, whose opinion can be obtained at once as to the expediency of instituting proceedings against any of the parties connected with the loss of the ship, or with the lamentable loss of life that took place on the occasion.

From Messrs. *Stack, Collis, & Mirfield*, Solicitors, to *S. C. Bayley, Esq.*, Junior Secretary to the Government of Bengal (No. 6592); dated 12 October 1865.

Sir,

WE have the honour to acknowledge the receipt of your letter, No. 5697, and in reply to state that we have submitted the papers to Mr. Paul, with a request that he would send his opinion with the least possible delay.

From Messrs. *Stack, Collis, & Mirfield*, Solicitors, to *S. C. Bayley, Esq.*, Junior Secretary to the Government of Bengal (No. 6657); dated 19 October 1865.

Sir,

WITH reference to your letter, No. 5659 of the 6th instant, we have the honour to forward copy of Mr. Paul's opinion as to the expediency of instituting proceedings against any of the parties connected with the loss of the ship "Eagle Speed," or with the lamentable loss of life that took place on the occasion.

2. With reference to the suggestion made by counsel as to the mode of dealing with the captain, (*see Opinion*), we may observe that if proceedings are instituted they will be under Act XV. of 1863, which repeals Section 81 of Act I. of 1859, and re-enacts, in Sections 4, 5, 6, and 7, how inquiries into charges against masters, mates, &c., are to be conducted. As the opinion in question is urgently required, and is not affected by what we have just stated, we have not considered it necessary to send it back to the learned counsel for amendment.

OPINION.

In considering and advising as to the expediency of instituting proceedings against any of the various parties connected with the loss of the ship "Eagle Speed," or with the loss of life which took place on that occasion, I shall follow the course of events which occurred after it was apparent that the steamer "Elgin" had not power to tow the ship out in consequence of the shifting of the wind, and the disturbance of the sea thereby occasioned. The "Eagle Speed" got under weigh off Halliday Island at 7 a.m. on the 21st August; the wind shifted at about 2.30 p.m. and the sea increased. The steamer was unable to tow the ship out. At 4 p.m., one of the hawsers having parted, the steamer was unable to keep the ship's head southward with the remaining hawser, and in consequence of the sea that was then running. The pilot, Mr. Vardy, who was virtually in charge of the ship, ought, under these circumstances, to have run back into smoother water with a view to anchor for the night, and particularly as he had been warned by the captain of the "Eagle Speed" to do so. The reasons assigned by the pilot for not running back have been so ably and conclusively refuted by Messrs. Bainbridge and Howe, that I need not recapitulate them; it will suffice to say that the pilot might have sought smoother water for the night; and by his neglect to do so rendered him amenable to prosecution and punishment under Section 280 of the Penal Code, which provides against the rash and negligent navigation of a vessel by the person for the time navigating. I am of opinion that the pilot was guilty both of rashness and negligence, so as to endanger human life within the meaning of Section 280. It was the duty of the pilot to have seen that the lead was kept going whilst the ship was drifting; and, in omitting to do so, and not seeing that the lead was actually kept going as above-mentioned,

mentioned, he was guilty of negligence as well as neglect of duty so as to endanger life, and therefore liable to punishment under Section 280 of the Penal Code, and Section 366 of the Merchant Shipping Act of 1856 (17 & 18 Vict. cap. 104). Messrs. Bainbridge and Howe state in the latter part of paragraph 50 of their report to the following effect:—"There can be no doubt that the ship might have run up and beached on Halliday Island if the cable had been slipped at daylight on the twenty-second." They then state their reasons in support of their opinion.

This opinion is backed up by the evidence of Captain Hoskins, and, having regard to the surrounding circumstances, seems to be quite correct. Here again a grave error is observable on the part of the pilot in the proper navigation of the ship, and I think it amounts both to negligence and clear neglect of duty, for which he has also rendered himself liable to punishment under the two sections last cited. The pilot has been already condemned for the actual loss of the ship, and I take it to be clear that the loss arose from his rashness and negligence in the navigation of the ship, whereby human life was, in the first instance, imperilled and endangered, and subsequently to a great extent lost. Messrs. Bainbridge and Howe, in the view expressed in their report, throw the responsibility of seeing the lead going, and the not slipping the cable at daylight, as well on the captain as the pilot; but I do not think the captain of the vessel is responsible for either of these omissions, as I am of opinion that the pilot had the management and navigation of the ship, and the captain, whilst the pilot was in charge, was, so to speak, relieved of the duty of navigating the ship, and was merely bound to have everything on board in readiness to carry out the orders of the pilot. It follows, from what I have just stated, that the graver offence of losing the ship does not rest with the captain but with the pilot, assuming even that the captain was bound to make suggestions to the pilot for the safety of the ship; he seems to have advised the pilot to run back, and had the pilot followed that advice, it is almost certain that the catastrophe would not have occurred. I now pass on to consider the conduct of the captain, the officers, and the crew of the ship after it was discovered that the ship was filling with water, and was in fact a wreck. I observe there was a lamentable absence of method, plan, or even regularity. There was no mustering up of the men, no specific orders given to them, no organisation of any scheme whereby the poor men about to be lost were to be rescued. Everything seems to have been involved in confusion, every one left to shift for himself, and the officers and the greater portion of the crew were almost the first of those who left the ship and sought the safety of the steamer. Whilst Captain Hoskins was either picking up the drowning men or going to and fro from the steamer to the vessel, the chief and second mates were on board the steamer affording no assistance whatever.

The captain displayed a deplorable want of the qualities of command, judgment, and management, and proved himself incompetent to discharge his duties. He may be dealt with under Section 81, of Act I. of 1859, with a view to the suspension or cancellation of his certificate. Assuming that the second mate has obtained a certificate, the same remarks apply to the second mate, who, beyond all doubt, conducted himself most disgracefully. The chief mate appears to have been unwell, and his illness in some measure affords him an excuse. I think he was not so unwell as to be wholly excused. Section 79, of Act I. of 1859, provides a penalty for misconduct of masters and seamen (including mates) endangering ship, life, or limb. That section, amongst other things, enacts, "that any master of, or any seamen, &c., who, by wilful breach of duty, or neglect of duty, or by reason of drunkenness, refuses or omits to do any lawful act proper and requisite to be done by him for preserving such ship from immediate loss, destruction, or serious damage, or for preserving any person belonging to, or on board of, such ship from immediate danger to life or limb, shall for every such offence be liable to imprisonment, with or without labour, for a term not exceeding two years." I think the Commissioners who have made a report on the loss of the ship have shown that various acts which were obviously proper and requisite to have been done as matters of duty were not done, and I have above given a general outline of the shortcomings of the captains and others.

I am therefore of opinion that the captain of the ship, the second mate, the boatswain, and those of the crew whose names are mentioned in the deposition of the chief mate of the "Eagle Speed," as having refused to man a boat, have, by their culpable conduct, rendered themselves liable to punishment under the sections above cited. Should these men be prosecuted, it will be necessary to charge specific acts against each of them, and for that purpose the actions, especially of the second mate, and the delinquents of the crew, should be scrutinised with greater particularity, and further information obtained. The facts elicited at the trial reported will bear a closer examination.

I may add, however, that the captain of the "Eagle Speed" appears to have acted with the best of intentions, and to have worked hard himself, with a view to save human life. It will be for the Government to consider whether, under the circumstances, the captain of the "Eagle Speed" is not likely to be sufficiently punished by proceedings being instituted against him under Section 81 of Act I. of 1859, or whether he should be further prosecuted under Section 79, of Act I. of 1859. Captain Hoskins, the Port Master, has been censured by the Commissioners, but I cannot say that he has in any way rendered himself liable to be dealt with by the law. Lastly, I have to consider the conduct of Captain Heath, Commander of the "Elgin." There is no special law regulating the duties of, and providing for, the punishment of captains of steam tugs. Where a captain of a steam tug is a licensed pilot, he is, by virtue of such license, subject to rules which have been specially made regarding pilots of steam tugs, and also subject, as I think, to the provisions of Act XII. of 1859, which relates as well to persons in the pilot service as those licensed to

act as pilots at the Bengal Presidency. There can be no doubt whatever that the loss of life was principally attributable to the steamer not anchoring, for which the Commissioners say Captain Heath is to blame. I do not think the blame rests with Captain Heath alone. By the 1st rule relating to pilots of steam tugs (assuming Captain Heath to be one) it is provided that pilots in charge of steam tugs, when towing a vessel in charge of a Government pilot, shall be in all respects under the direction of the latter officer, &c. &c. The pilot, Mr. Vardy, does not seem either to have ordered or insisted upon Captain Heath anchoring his steamer. The captain of the ship sent an order to that effect,—this order Captain Heath was not in duty bound to obey. Captain Heath seems to have exercised his own judgment in not anchoring, and in the exercise of that judgment he not only erred lamentably, but displayed a degree of apathy for human life rarely heard of. His reasons for not anchoring, be they well or ill founded, must give way to the argument that he ought to have tried the experiment of anchoring. Had he discovered that anchoring was attended with danger, he might readily have slipped his cable. The question therefore remains, whether any, and what proceedings ought to be adopted against Captain Heath. If Captain Heath is a licensed pilot, and it can be clearly shown that it was his duty, having regard to the emergency in which he and others were placed, and independently of any direction from the pilot on board, to anchor his steamer, he may be dealt with under the provisions of Act XII. of 1859, or if the *status* assigned to persons under Act XII. of 1859 is superior to that of Captain Heath, his license may be summarily withdrawn. Section 280 of the Penal Code, cited by me before, applies to a person navigating a vessel or ship so rashly and negligently as to endanger human life, &c., and does not, I think, reach the case of Captain Heath. The words of Section 336 of the Penal Code, which run thus: "Whoever does any act so rashly or negligently as to endanger human life, or the personal safety of others, shall be punished, &c.," are wide enough, when read in connection with Section 337, to include almost any kind of rashness or negligence whereby human life or the personal safety of persons is endangered.

Under Section 32 of the Penal Code, words which refer to acts done, extend also to illegal omissions; and by Section 43, the word "illegal" is made applicable to every thing which is an offence, or which is prohibited by law, or which furnishes ground for a civil action. Had Captain Heath been ordered by the pilot, Mr. Vardy, to anchor, assuming Captain Heath to be a licensed pilot, his omission to do so might possibly have rendered him amenable to Section 366, though such liability is open to doubt, owing to the restricted meaning of the word illegal. If Captain Heath is not a licensed pilot he escapes all liability, and his escape will suggest the expediency of having a law framed for the purpose of regulating the duties of captains of steam tugs, who, by reason of their employment, are at any time likely to be placed in a situation similar to that in which Captain Heath's judgment failed him. It is only necessary to notice Act XXI. of 1858, which is an Act for the regulation of native passenger ships, and of steam vessels intended to convey passengers on coasting voyages. It may be said that steam tugs convey passengers, that Section 20, of Act XXI. of 1858, merely exempts ships of war and sea-going steam vessels employed in the conveyance of the public mails under a contract, and that consequently a steam tug is provided for by that Act. I think, however, that Act relates, as is apparent by its title and provisions, to steam vessels ordinarily intended for coasting voyages. I have not considered the conduct of the emigration agent and protector, as their failure to perform with adequate care their respective duties, did not tend proximately to the loss of the ship or loss of life, it being clear upon the evidence that the ship might have been easily saved by the exercise of ordinary prudence and caution, and that human life would not have been sacrificed had Captain Heath anchored his steamer close to the ship. In this view of the part these gentlemen took in the despatch of the ship, the opinion required of me does not embrace a consideration of their imputed misconduct.

17 October 1865.

(signed) G. C. Paul.

From Captain C. Burbank, Protector of Emigrants, Calcutta, to the Honourable A. Eden, Secretary to the Government of Bengal (No. 670); dated 14 October 1865.

Sir,

I HAVE the honour to submit the report called for in your endorsement, No. 1383 T., dated 23d ultimo, regarding the loss of the "Eagle Speed," in the River Mutlah, in August last.

2. The several requirements of the Act, especially as respects Sections 48 to 54, which expressly require my personal notice and presence, were most carefully complied with from the fitting out of the ship to her final departure on the 20th August, and indeed in regard to the Act generally. All the duties therein prescribed as belonging to my office were carried out both by myself and the other officers immediately concerned, to the best of our ability.

From *Hunt Marriott*, Esq., Emigration Agent for British Guiana, to Captain *C. Burbank*, Protector of Emigrants, Calcutta, (No. 26); dated 11 October 1865.

Sir,

I HAVE the honour to acknowledge receipt of your Office Memorandum, No. 660, accompanying letter from E. C. Bayley, Esq., Secretary to Government of India, to the Honourable A. Eden, Secretary to Government of Bengal, referring to the loss of the emigrant ship "Eagle Speed," in the Mutlah, on the 21st August ultimo, calling for information as to whether the requirements of terms of Act XIII., 1864, especially as regards Sections 48 to 54, were personally performed by the three officers designated in his letter.

In reply, I have the honour to state on my part, as one of the three officials alluded to, that to the best of my knowledge and belief, every requirement of those sections, in so far as they relate to the Emigration Agent, were personally and strictly performed by myself.

The original document forwarded is herewith returned.

From Surgeon *S. B. Partridge*, Government Medical Inspector of Emigrants, to Captain *C. Burbank*, Protector of Emigrants, Calcutta; (dated 10 October 1865.)

Sir,

WITH reference to your Office Memorandum, No. 660, dated the 9th instant, I have the honour to state that, as far as I am personally concerned, all the requirements of Act XIII., were rigidly complied with in the case of the "Eagle Speed;" I assisted you in the primary survey of the vessel at Mutlah, on the 25th July; on the 17th August I again visited the vessel, for the purpose of examining her stores and fittings, and on the 19th August I inspected at the Sealdah Railway Station the emigrants about to embark in her, the last inspection being in excess of the actual requirements of the Act.

From Captain *C. Burbank*, Protector of Emigrants, Calcutta, to *J. Geoghegan*, Esq., Officiating Junior Secretary to the Government of Bengal (No. 703); dated 27 October 1865.

Sir,

I HAVE the honour of acknowledging your letter, No. 5965, dated 23d instant. On the 21st I had the honour of receiving from your office copy of a letter, No. 2420, dated 10th September last, from the master attendant, to the address of the Secretary, Government of Bengal, and of a presentment by the jury empanelled to try Mr. Mate Pilot J. W. Vardy. To this a memorandum was appended indicating that the communications were to be regarded as enclosures of your office letter No. 1284r. of 17th September, and that the proceedings of the Marine Court would follow.

This morning I am in receipt of your letter No. 5965, dated 23d instant, covering these proceedings, and calling upon me to reply at once to your office letter No. 1284r. of 17th September.

It will be seen that this latter communication is only just now completed by the transmission of its intended inclosure, and that I have suffered no time to elapse before submitting my reply.

Captain Reddie's comment on my conduct contains two distinct charges of what he considers dereliction of duty and certain expressions of his individual opinion as to what ought to have been done under the particular circumstances of the despatch of the "Eagle Speed." I propose to reply to each in its order:—

First. Captain Reddie* considers that it was my special duty to have "satisfied myself that the crew were in a fit state to move the ship." No such duty has been assigned to the protector of emigrants in the Emigration Act of 1864, or in the special rules sanctioned by Government for his guidance. Nor could it reasonably be assigned to him, inasmuch as it is not provided that this officer should necessarily be a seaman, and he may therefore be a person totally unqualified for such a task. But the duty is very distinctly assigned to the pilot or Customs officer in charge, who is enjoined in the Act (Section 55) "to muster the crew and passengers," and in addition to this, the rules of the Bank shall distinctly provide that the pilot shall inspect the crew of every ship leaving this port, and the Emigration Rules of 31st March 1865 enjoin this inspection before embarkation on the commanders in presence of the pilot (Rule 19.) It is, I submit, to myself at least, perfectly clear that neither the letter nor the

spirit of the law imposes on the protector of emigrants any responsibility in respect of the condition of the crew, and that when, as in the present case, the regulated statement of the crew and passengers has been furnished by the commander and supported by the assurance of the pilot that all is ready for sea, the general surveillance contemplated in Section 15 of the Rules is completed. But if this were otherwise, if it were my duty to take direct cognisance of the condition of the crew and act according to my own judgment in the event of intoxication among them, I do not hesitate as a seaman to affirm that I would not have hindered the progress of the vessel as long as she had hands on board to get her out of moorings. Every seaman of every port is aware, and his Honor has it before him in the proceedings of the Marine Court, that the intoxication of a portion of the crew is a daily occurrence in a ship leaving for sea. Detention on this ground is never considered desirable, and I cannot entertain a doubt that the wisest course to follow with the crew of the "Eagle Speed," was to get her away to a sheltered situation, such as Halliday's Island, under steam as speedily as possible, when it was to be expected that in her, as in every other case of the kind, a single night's rest would bring all to their duty.

The foregoing remarks I submit in reply to Captain Reddie's charge respecting the crew. He is further of opinion that I should have remained and seen the vessel moved out. I did so, the vessel was in mid-stream when I left the river side.

Captain Reddie, guided by subsequent events, comes to the conclusion that I should have gone down in the vessel, as this was the first time coolies had been shipped from the Mutlah. I came to this conclusion beforehand, and went, provided with clothing, &c., for the river trip, and abandoned the intention only when I ascertained that I could not return to Calcutta till four days afterwards, and must have left other duties undone of similar kind and equal urgency.

Captain Reddie states his second charge as follows :—"But Captain Burbank committed a still greater error, and one to which I attribute partly the loss of the ship, allowing the 'Lady Elgin' to tow her." I beg to offer a brief narrative of all that was done by me.

The agents of the ship made application to me for the "Lady Elgin" to tow the "Eagle Speed" to sea. I replied that she was disqualified, not being a first-class steamer. Thereupon they urged that no first class steamer was available, and that they could prove, by the evidence of the pilot appointed to the ship, not only that the "Lady Elgin" was perfectly competent, but that for a special reason he preferred her to any other vessel. This reason I knew to be that her commander was the only commander of a steam tug who was a passed pilot for the Mutlah river. I submitted the question, with Mr. Vardy's note, to the Government of Bengal for orders, with an expression of my own opinion in favour of the application. In reply, I received Mr. Secretary Bayley's letter, No. 5040 of 31st August, sanctioning the engagement of the "Lady Elgin." This was my whole proceeding. To what particular portion of it Captain Reddie's stigma of "excuse" applies, I am unable to discover. Whether there is in it anything frivolous, I am content to leave it to the verdict of the Lieutenant Governor whether there is anything "untrue" to the evidence appended hereto of the agents, on whose statement I proceeded. If the charge of frivolity or untruthfulness can be sustained against me, if even a suspicion of either can justly arise out of my conduct, it will matter little that the master attendant employs words of such unsparing severity in commenting on the case; but if from the above simple statement the Lieutenant Governor is satisfied that my representations have been neither frivolous nor untrue, I trust, in all submission and deference, that he will be pleased to take notice of the fact that Captain Reddie has expressed his unsupported opinion on the conduct of an officer not in his department in language of the most offensive significance.

To Captain Reddie's allegation, that I was perfectly aware that pilots are constantly appointed to tug steamers when the captain is incapacitated, I beg to state in reply that such a thing has never come to the knowledge either of myself or my predecessor in office, the present emigration agent for Mauritius. We know full well that every commander of a tug on the Hooghly is required to be a passed pilot of the river. We have never heard of a mere pilot being put in charge of a tug. But even if there be, as Captain Reddie says it is a
constant

constant occurrence, it can have no sort of bearing on the present argument. The commander of the tug was not incapacitated, on the contrary his special and unique qualifications led to his vessel being thought a desirable one, and Captain Reddie, in reasserting that a first-class tug should have been sent in charge of a competent pilot simply evades the point at issue by ignoring the facts that are in evidence regarding first-class tugs at the time.

Captain Reddie proceeds—"The weather was so threatening that I cannot conceive his allowing the experiment to be made." To this I need only to reply: the weather throughout the day was lovely, with a single shower in the afternoon, and at the close of it there was no indication of a sudden change. One of the most remarkable points in this most remarkable history was the moderateness of the weather, even when things were at their worst.

I trust that this statement of facts may be considered a satisfactory explanation of my conduct by the Lieutenant Governor. With due submission, I would add that at even this interval of time I am unable to look back on the despatch of the "Eagle Speed" with any feeling but one of conviction that both in following the rules laid down for my guidance, and in adopting measures of precaution not laid down in rules, but dictated by the peculiar circumstances of this occasion, I was fully mindful of all that was required of me, and rightly or wrongly, I acted to the best of my judgment.

The papers appended exhibit proof on the several points brought forward by me with regard to the tug steamer.

A copy of your office letter above quoted has been forwarded to Mr. Hunt Marriott for reply.

From Messrs. *Wattenbach, Heilgers & Co.*, Agents, late Ship "Eagle Speed," to Captain *C. Burbank*, Protector of Emigrants; (dated 24 October 1865.)

Sir,

WE have pleasure in certifying to the fact that at the time the "Lady Elgin" was engaged to tow the "Eagle Speed," no first-class steamer, as far as we could ascertain, was willing to undertake the job, nor has any first-class steamer ever towed in the Mutlah River.

From Messrs. *Borradaile Schiller & Co.*, to Captain *C. Burbank*; (dated 26 October 1865.)

Dear Sir,

WE send you a memorandum stating the draught of vessels towed in the Hooghly by the steamer "Lady Elgin." We notice that the captain has overlooked to fill in those vessels that left the Mutlah. We recollect the "Madagascar" was fully 22 feet, but with the given particulars we presume you will be fully prepared to meet all inquiries.

From Messrs. *Borradaile Schiller & Co.*, to Captain *C. Burbank*; (dated 23 October 1865.)

Dear Sir,

WITH reference to your note to our Mr. Schiller regarding the vessels which the steamer "Lady Elgin" has towed out to sea both here and in the Mutlah, we beg to hand you annexed list of both since the agency was entrusted to our hands.

The largest vessel towed out in the Mutlah was the "Madagascar," a vessel that with a draught of 22 feet 6 inches was towed out by the "Lady Elgin" against the monsoon in thirteen hours to sea. All these performances have been done since December 1864. The average size of the ships taken out in the Hooghly is fully as large as any other tug in the river we believe can show. A small steamer pilot of Messrs. Apcar & Co. was sent round to tow out the "Lady Cecilia," and on a previous occasion we had the small steamer "Rifle" to take several large-sized ships to sea down the Mutlah River.

We believe Captain Heath as competent as regards the navigation of the Mutlah as any one as yet placed on that river by the Bankshall authorities.

The "Lady Elgin" steamer is known as a capital sea-boat, formerly in Her Majesty's Service called the "Avon" and used as an Admiralty tender. We regret that we cannot give you a memorandum of each vessel's draught, but no doubt this can be easily supplied from Bankshall, or perhaps from the steamer's log book. We will ask the captain to furnish you with these particulars as soon as convenient.

SHIPS TOWED ON THE HOOGLY.

Date.		Tons.	Draughts.
			<i>Ft. in.</i>
15 Dec. 1864	Ship "Mars," from Cossipore to sea - - -	721	20 4
15 Dec. "	" "Eliza," from Bedford Channel to Calcutta -	1,378	21 0
16 Jan. 1865	" "John Allan," to Saugor - - -	733	19 10
2 Feb. "	" "Camperdown," to outer Gasper Light - -	1,243	22 0
2 Feb. "	" "Altcar," from sea to Calcutta - - -	-	19 0
2 Feb. "	" "Medusa," to sea - - -	848	20 10
2 Feb. "	" "Cirocco," in ports - - -	1,246	-
14 Feb. "	" "David MacIver," to outer Gasper Light -	868	21 6
14 Feb. "	" "Durham," from Bedford Channel to Calcutta -	1,286	19 2
24 Feb. "	" "Jearni Douglas," from Calcutta to outer Gasper Light - - -	1,166	22 0
28 Feb. "	" "Jagoff," from Hautcollah to sea - - -	695	21 10
16 Mar. "	" "Wide Awake," to sea - - -	702	18 10
16 Mar. "	" "Virginia," from inner Gasper Light to Calcutta	700	16 0
16 Mar. "	" "White Hall," from Calcutta to Mud Point -	936	22 6
In Ports.			
15 Mar. "	The "Anglo Indian" - - -	1,486	-
15 Mar. "	Ship "Jamjeegee Sujenbhoy Alfred" - - -	1,154	-
31 Mar. "	" "Etienne" and "Lawrence," from Calcutta to sea - - -	356	16 0
6 April "	" "Countess of Elgin," from Calcutta to sea -	713	19 0
6 April "	" "Kirkham," from Diamond Harbour up to Calcutta - - -	1,061	16 0
5 May "	" "Tieselier," from Calcutta to sea - - -	1,088	19 4
5 May "	" "John Ledgell," from Calcutta to sea - -	770	-
25 May "	" "Colgrain," from Calcutta to sea - - -	583	17 6
25 May "	" "Glen Isla," from Calcutta to sea - - -	1,069	17 6
18 July "	" "Alexandra," from Saugor to Calcutta. This vessel had 2,500 tons of cargo on board -	1,351	23 0
June -	" "Duc de Magenta" - - -	950	18 0
From Canning to sea.			
April -	" "Pleiades" - - -	1,350	20 4
May -	" "Chanticleer" - - -	900	20 3
June -	" "Madagascar" - - -	1,250	22 7
	" "Undine" - - -	900	18 0
	" "Angele" - - -	900	17 3
July -	" "Splendido" - - -	650	18 0
	" "Eagle Speed" - - -	-	17 0

SHIPS TOWED ON THE MUTLAH FROM CANNING.

	<i>Tons.</i>		<i>Tons.</i>
The "Pleiades" - - -	754	The "Etienne" and "Lawrence" -	359
" "Angele" - - -	0	" "Grande Condé" - - -	524
" "Sleudide" - - -	483	" "Anna Lange" - - -	951
" "Marie Gabrielle" - - -	0	" "Eagle Speed" - - -	1,287
" "Chanticleer" - - -	688	" "Margarite de Anjor" - -	489
" "Madagascar" - - -	1,320	" "Lady Cecilia" - - -	460
" "Undine" - - -	627		

Certificate from Pilot *J. W. Vardy*, Calcutta; (dated 5 August 1865).

I HEREBY certify that I consider the "Lady Elgin" to be a first-class steamer for the Mutlah River, and that on account of the experience of the captain I would much prefer that she should tow the ship "Eagle Speed."

From Captain *C. Burbank*, Protector of Emigrants, Calcutta, to *J. Geoghegan*, Esq., Officiating Junior Secretary to the Government of Bengal (No. 708), dated 31 October 1865.

Sir,

WITH reference to the concluding paragraph of my letter (No. 703) of 27th instant, I have now the honour of submitting a letter from Mr. Hunt Marriott, Emigration Agent for British Guiana (No. 37), dated yesterday, reporting, in reference to the 2d paragraph of Captain Reddie's letter to Government, and the Proceedings of the Marine Court, on the loss of the "Eagle Speed."

From *Hunt Marriott*, Esq., Emigration Agent for British Guiana, to Captain *C. Burbank*, Protector of Emigrants (No. 37), dated 30 October 1865.

Sir,

I HAVE the honour to acknowledge the receipt of your Office Memorandum (No. 701), enclosing copies of two letters from the Honourable A. Eden, Secretary to Government of Bengal, and Captain Reddie, the Master Attendant of Calcutta, as also printed copy of the Proceedings of the Marine Court, in the case of Mr. Mate Pilot Vardy. In the letter from the Secretary to Government of Bengal, I am requested to furnish an explanation with reference to the 2d paragraph of the Master Attendant's letter forwarded with the proceedings of the Marine Court to the Bengal Government.

In reply, I beg to state, for the information of the Bengal Government, that I have carefully read the letter of the Master Attendant, especially that portion of it relating to myself, as also the Proceedings of the Marine Court. It is primarily necessary for me to remark, that I am much surprised that the Master Attendant should have so far deviated from his proper line of duties as to comment on, and attempt to amend, the finding of the Court by voluntarily offering his censorious opinion on the conduct of the Emigration Agent, an officer in no way amenable or subordinate to him after the Court had, by its finding, recorded no admission of blame against him.

The Master Attendant gives it as his opinion, that the Emigration Agent should have gone down in the "Eagle Speed." How he has arrived at that conclusion I cannot conceive, unless it be that under the impression I had been summoned as a witness as described in Proceedings of the Court as Captain Marriott; that I was a nautical man, and that my experience as such might possibly have averted those fatal errors which the nautical authorities and others present so lamentably committed. But not belonging in any way to the Marine Service, I cannot possibly imagine what benefit could have occurred by my going down in the ship. Indeed, had I gone down and solely retained my senses at the time of the catastrophe, it is not probable that any humble and unprofessional advice, however earnestly tendered by me, would have had the slightest effect in opposition to the unanimous opinions of the Port Captain of Canning Town, the pilot, the captains of the "Eagle Speed" and "Lady Elgin," one or two civil and military officers, and other Europeans present.

From the suggestion of the Master Attendant it would be supposed that as he must have been cognizant of this unusual but authorised embarkation at Mutlah experimentally, and that he deemed it requisite, it being the first time of such an event, that additional precautions should be taken, that he would have made such arrangements and suggestions as he now speaks of, prior to the vessel's sailing, with a view of preventing the sad calamity which has occurred. If he did so I am not aware of it, nor did any information reach me, from any source, that it was necessary that I should go down in the vessel. Had my own experience shown me that I could have been of the slightest service, it would have appeared a pleasant duty to have gone down with the ship. The agent's duties are formally at an end when he has shipped his people and handed over to the captain and surgeon superintendent their respective documents and authorisations, the latter officer then taking full and sole charge of the emigrants.

I embarked the people at half past nine a.m., and remained on board until half past four p.m. I never left a ship with less anxiety for her success. This satisfaction was produced by her spacious and airy accommodation, the great height between decks, the apparent smartness and intelligence of the captain and his officers, and the prospect of the ship's speedy passage to sea, as also from a long conversation with the pilot, who made light of the dangers of the Mutlah in comparison with the tedious and dangerous navigation of the Hooghly.

In the "Eagle Speed" the passengers were a very fine well behaved lot of people, and their order and good behaviour on the trying night preceding the abandonment of the ship by the captain, officers, and crew was beyond all praise. They worked incessantly at the pumps and rendered willing aid whenever called upon. Had they even then, or at any time previous, shown any symptom of insubordination, I might possibly perceive some show of

reason in the Master Attendant's suggestion, but I am quite at a loss at present to perceive the force of it. Had that officer lamented the want of his own experienced presence in the "Eagle Speed" it would easily have been understood, and I trust that the Bengal Government will not endorse the Master Attendant's suggestion, but acquit me of any neglect of interest in the safety of those unfortunates who were shipped in the "Eagle Speed," or indeed on any other occasion.

RESOLUTION.

Emigration Department.—Fort William 15 November 1865.

1. THE delay which has occurred in dealing with this case is owing chiefly to the absence of the Law Officers of the Government from Calcutta during the Doorga Poojah holidays, and partly to the want of a full explanation from Captain Burbank, the protector of emigrants, which has now been received.

2. On the 14th July last the protector of emigrants forwarded to the Government for orders a letter from the commander of the "Eagle Speed," then lying in the Mutlah, tendering for the conveyance of native emigrants to Demerara. There was some doubt as to whether, under a strict construction of the law (Section 7, Act XIII., of 1864), emigration could take place from the Mutlah; but as it appeared to the Lieutenant Governor that Canning was virtually an auxiliary port of Calcutta, connected with it by a railway and under the same administration and management, and that the shorter passage to sea would be in every way advantageous to the emigrant labourers, his honour directed the protector to report fully on the subject, and authorised him, in the meanwhile, to allow the "Eagle Speed" to embark emigrants at Canning for Demerara if she were in all respects fit for the service. The tender of the "Eagle Speed" was accordingly accepted, and the ship, having been surveyed and reported perfectly eligible in every respect for the conveyance of emigrants, was licensed on the 5th August to convey 450 adult emigrants to Demerara.

3. Both the protector and the medical inspector of emigrants reported very strongly in favour of Canning as a port of emigration, and considered that to make it the place of departure for emigrant ships would be decidedly a change for the better, provided that certain specified precautions were taken to prevent delay in the embarkation of the labourers and in their departure to sea after embarkation. Accordingly the embarkation of labourers at Canning was authorised generally, subject strictly to the conditions specified by the protector, all extra expense being borne by the emigration offices. And the protector was desired to report after six months on the results of the experiment in respect to the health of the emigrants and the sufficiency of the existing establishment to superintend the embarkation. It should be explained, however, that the orders authorising emigration generally from the Mutlah, though issued and dated the 7th September, were given by the Lieutenant Governor when on tour on the 31st August, and that intelligence of the loss of the "Eagle Speed" did not reach his honour until afterwards. It has since been intimated to the protector that no further emigration from the Mutlah will for the present be allowed.

4. The Lieutenant Governor has no doubt whatever that in almost all respects it is better for emigrant labourers to depart to sea by the Mutlah than by the Hooghly, and that the danger or risk of accident in the navigation of the former is less than in that of the latter. But if a vessel with emigrants on board be wrecked in the Mutlah even by unavoidable accident, and if all possible means be taken to save the lives of the emigrants—still more if she be lost through gross carelessness and shamefully abandoned in a sinking state with emigrants on board—it is less likely that they will be afterwards saved in a river as yet comparatively unfrequented and unprovided with a telegraph than if they were wrecked in the Hooghly, where early notice would be given, and where more ready and abundant means of help would be at hand. For this reason it is inexpedient that there should be at present any further emigration from the Mutlah, and it has accordingly been prohibited.

5. On the 7th August the protector forwarded, for the orders of Government, a certificate from Mr. Vardy, the pilot, who was to have charge of the "Eagle Speed,"

Speed," to the effect that he considered the "Lady Elgin" to be a first class steamer for the Mutlah river, and that on account of the experience of the captain he would much prefer that she should tow the "Eagle Speed" to sea. The protector observed that the "Lady Elgin" was the only steamer employed on the Mutlah, and as the commander was well acquainted with the channels, he proposed that she should be employed in towing emigrant vessels to sea, though classed only as a second-rate tug steamer, until commanders of first-class tugs should qualify themselves for the service. The employment of the "Lady Elgin" as proposed and recommended was accordingly sanctioned.

6. The circumstances under which the "Eagle Speed" left Canning with emigrants on board and was wrecked in the Mutlah are stated at length in the report of the officers appointed, under Section 100, Act I. of 1859, to make a formal investigation into the loss and abandonment of the ship, and need not be here recapitulated. The statement made in the report is fully borne out by the evidence taken before these officers, and before the marine court assembled for the trial of the pilot.

7. It may here be mentioned that although the ship went aground on the 21st August, and the wreck was abandoned by the "Lady Elgin" on the 22d, the first intimation of the loss was received in Calcutta on the 23rd. Prompt measures were immediately taken by the marine authorities, the protector, the emigration agent, and the agents of the "Eagle Speed" to send assistance to the wreck and to save as many lives as possible. A marine court was assembled on the 28th August for the trial of Mr. Vardy, the pilot in charge of the vessel. He was tried on the following charges:—

First.—That he, being in pilotage charge of the ship "Eagle Speed," outward-bound, did, through unskilfulness, ignorance, negligence, or inattention, suffer that vessel to ground on the Roy Mutlah Sand near the entrance of the river Mutlah on the 21st day of August 1865, in consequence of which she became a total wreck the following day.

Second.—For not having done his utmost to save the lives of the emigrants after the vessel became a wreck, but for having unnecessarily abandoned the greater number of them to their fate.

On these two charges the jury unanimously found him guilty, and he was sentenced to be dismissed from the service. This sentence has since been confirmed by the Lieutenant Governor. The court sat for five days, and the evidence it took of all the persons chiefly concerned with the wreck, or likely to have a knowledge of the circumstances under which it happened, was of great value in the subsequent inquiry.

8. The master attendant, in submitting the record of the trial, forwarded certain recommendations of the jury, which will be presently noticed, and reflected severely on the conduct of Captain Burbank, the protector, and Mr. Heath, the master in command of the "Lady Elgin," whose pilot's license he reported that he had suspended. The suspension of Mr. Heath's license was confirmed, and Captain Burbank was called upon for an explanation, which he has since furnished.

9. The Lieutenant Governor was absent from Calcutta when the wreck happened. Immediately on hearing of it he directed an inquiry under the local Merchant Seamen's Act, with a view to further proceedings. The Government Solicitor had in the meantime been desired to advise the Government whether there were sufficient grounds for proceeding, either criminally or before the Admiralty Court, against the captain, officers, or crew of the "Eagle Speed" and to institute such proceedings if thought expedient; but on the appointment of a commission of inquiry the Government Solicitor deemed it advisable to wait until the report of the commission should be received.

10. The officers charged with the inquiry under the Merchant Seamen's Act (Mr. Bainbridge, the magistrate of the 24-pergunnahs, and Captain Howe, the deputy master attendant), after a thorough and careful investigation, made their report on the 27th September. The report and proceedings were then sent to the Government Solicitor for the Advocate General's opinion as to the course to be taken, but it was not until the 19th October that counsel's opinion on the subject could be obtained. In the meanwhile Captain Brinsden, the commander of the "Eagle Speed," had intimated his intention of leaving

Calcutta ; and as the commission of inquiry was of opinion that, though he had grossly erred in judgment, he was not liable to a criminal prosecution, no steps were taken to detain him.

11. The Lieutenant Governor having attentively considered the proceedings both of the marine court and of the commission of inquiry, will now record his opinion on the several points raised in connection with this lamentable occurrence.

12. The committee of inquiry are of opinion that upon the evidence there is not the smallest doubt of the seaworthiness of the "Eagle Speed" or of the soundness and efficiency of her boats. In this the Lieutenant Governor entirely agrees. There appears indeed no reason whatever to doubt that she was thoroughly examined and surveyed, and that, as reported by the surveyor, she was in every way adapted for the conveyance of emigrants. No blame can therefore rest on Captain Dando, the surveyor for Lloyd's Agency, or on Captain Boon, the Government surveyor, who certified as to her fitness for the conveyance of emigrants.

13. Captain Burbank, the protector of emigrants, is condemned by the master attendant, Captain Reddie, first, for allowing the "Eagle Speed" to proceed on her voyage when he knew from her commander that a part of the crew was intoxicated; second, for not going down the river in the "Eagle Speed," this being the first time coolies were shipped from the Mutlah; and third, for allowing the "Lady Elgin" to tow the "Eagle Speed," and for making to the Government a frivolous, if not untrue, excuse for her employment. The Committee also are of opinion that it was Captain Burbank's duty to see that the commander of the "Eagle Speed" duly complied with the rule obliging him to muster the crew in the presence of the pilot, and that he ought to have assured himself of their physical as well as numerical efficiency. On all these points Captain Burbank has submitted a full, but not altogether a satisfactory explanation. Although there is no express rule requiring the protector to examine and inspect the officers and crew of an emigrant vessel, it is his duty to see that all the rules are complied with. It is therefore to be regretted that he did not see that the officers and crew were duly mustered by the commander in the presence of the pilot, and that he did not properly assure himself that they were in all respects efficient. At the same time it must be admitted that the responsibility for seeing that the officers and crew of a vessel are efficient rests primarily with the pilot, and that whatever may have been the physical condition of the crew when the vessel left her moorings, neither the loss of the ship nor the subsequent mismanagement and abandonment of the wreck is in any way to be attributed to that cause. According to Dr. O'Sullivan, there was nothing the matter with any of them which a few days at sea would not remedy, and, with the exception of one or two who required trifling medical treatment, the whole crew was sound, though most of them were recovering from the effects of too much liquor. It is possible that if the commander and chief officer had been in strong health they might have conducted themselves otherwise than they did after the vessel struck, and have done more to save the lives of the emigrants; but the evidence does not satisfy the Lieutenant Governor that the physical condition of the officers, even if it had been more carefully inquired into by Captain Burbank, was such that, in the absence of an express rule, he would have been justified in detaining the ship if the pilot made no objection on that account. A rule will now be proposed for the sanction of the Government of India, making it incumbent on the protector and the emigration agents to assure themselves that the officers and crew of every emigrant vessel are numerically sufficient and sound in health before allowing the emigrants to embark.

The Lieutenant Governor considers that Captain Burbank exercised a sound judgment in quitting the "Eagle Speed" after she had left her moorings, and in not proceeding in her down the river as he at first intended. His Honour attributes no blame to Captain Burbank for recommending, on the certificate of Mr. Vardy, the employment of the "Lady Elgin" to tow the "Eagle Speed" to sea. And in every other respect it is shown that Captain Burbank and the officers of his department did their duty thoroughly.

14. Of Mr. Marriott, the emigration agent, it is considered by the Committee that he was bound to approve the master, officers, and crew of the "Eagle Speed;" that he failed in his duty in not seeing that the commander
mustered

mustered the officers and crew in the pilot's presence; that the life buoys provided, though more than sufficient in number, were of bad quality; and that there ought to have been five topases instead of four. He is also blamed by the master attendant for not going down the river with the emigrants. On the last point only has Mr. Marriott had an opportunity of offering an explanation, and the Lieutenant Governor considers it to be satisfactory. It was not necessary that either the protector or the agent should accompany the emigrants to sea. In regard to the inspection of the officers and crew, it is to be regretted that Mr. Marriott did not see that they were mustered in the presence of the pilot, but his responsibility in this respect is not different from that of the protector. He will be called upon to explain why the life buoys provided were not properly covered, and the protector will be desired to take especial care that the life buoys are always thoroughly serviceable, and that the full number of topases are invariably appointed.

15. In regard to Captain Brinsden, the commander of the "Eagle Speed," the Committee are of opinion that although the ship's crew was numerically sufficient, yet their physical condition at starting was such as to imperil the emigrants in the event of an emergency like that which actually happened. The captain himself had just recovered from illness, and was not strong; the chief officer was incapacitated from sickness; the medical officer was suffering from an attack of pleurisy and the effects of a broken rib; and a large proportion of the crew were only just recovering from the effects of intoxication. Yet Captain Brinsden did not muster his officers and crew in the presence of the pilot as he was bound to do, and he allowed the pilot to take the vessel to sea knowing that in respect to the health and condition of the officers and crew she was not efficient; for this he is clearly to blame. When the hawser parted, although Captain Brinsden proposed to the pilot to anchor, he does not appear to have urged his proposal, or to have repeated it till the ship struck the sand, and though, while the ship was drifting on to the sand, there was no leadsman in the chains, and the lead was not kept going, he neither had soundings taken, nor pointed out the necessity for it to the pilot. When, on the morning of the 22d, the commander of the "Lady Elgin" refused to anchor his steamer under the stern of the ship, and it was resolved to take to the boats, Captain Brinsden displayed the most utter want of coolness and judgment. Instead of assuming the command, directing others, and enforcing order and discipline on those who were bound to obey him, he worked with his own hands, left every one to shift for himself, and the officers and crew to do as they pleased, and then took measures for his own personal safety, leaving the ship when it was certain that she would not sink for many hours, and making no protest whatever against her being abandoned. In the opinion of counsel, Captain Brinsden might have been prosecuted in the Admiralty Court under Section 79, Act I. of 1859, though it is suggested that proceedings under Section 81 (superseded by Act XV. of 1863) with a view to cancel his certificate would have been more suitable. But as Captain Brinsden has received his certificate from the Board of Trade, not from the Local Government, the provisions of the last mentioned Act are inapplicable to his case. The only course that can be taken is to report his conduct to the Board of Trade, with the Lieutenant Governor's strong recommendation that his certificate be cancelled.

16. Of Mr. Vardy there is little to be said; he has been dismissed from the service of the Government, and will never again be employed as a pilot. He has no certificate of competency as master or mate, and it is not likely that he will be able to obtain one. The finding of the Marine Court condemns him as guilty, not only of unskilfulness and negligence in losing the ship, but of inhumanity in leaving the unfortunate emigrants to their fate. He is shown to have neglected his duty of seeing that the officers and crew were mustered before the ship sailed, and a further responsibility rests upon him for having certified the "Lady Elgin" as a first class steamer for the Mutlah, and having recommended her employment to tow the "Eagle Speed," though he must have known that in the event of bad weather she was unfit for the service. There can be no doubt that to Mr. Vardy is chiefly owing the wreck of the "Eagle Speed" and the terrible loss of life that ensued. With ordinary prudence he would not have persisted in going to sea in tow of an inefficient steamer; with ordinary skill he might have saved the ship from grounding; and with ordinary judgment and courage he could have run her into a place of safety.

safety. In all these respects he lamentably failed, and he also shares the chief blame of prematurely abandoning the ship and leaving the emigrants to their fate. It does not, however, appear that he has laid himself open to any further proceedings.

17. Mr. Hoskins, the port master of Canning, deserves every credit for the personal exertions he made to save life; but he also failed to display the judgment and aptitude for command which are expected in an officer of his position. As the Committee justly remark, he worked himself instead of effectively directing the efforts of others. As port master, seeing that no one in the ship was fit for the exercise of command under the trying circumstances in which she was placed, he ought undoubtedly to have assumed responsibility, and to have required all, both in the ship and on the steamer, to obey his orders and act in concert for the safety of the emigrants. That he should have advocated the abandonment of the "Eagle Speed" and the return of the "Lady Elgin" to Port Canning, when he thought the ship was sinking with numbers of unfortunate emigrants still clinging to her, is unpardonable. He is therefore suspended from his office, and the master attendant will be requested to report, after calling upon him for such explanation as he may have to offer, whether he ought not to be removed from the service.

18. The evidence of Mr. Heath, the commander of the "Lady Elgin," as truly described by the Committee of Inquiry, is marked from first to last with a most discreditable want of judgment, resource, courage, and humanity. He does not appear to hold a certificate of competency either from the Board of Trade or from the Local Government, and he is beyond the reach of the law. His pilot's license has been taken from him, so that he can no longer command a tug steamer without having a pilot on board. And here the Lieutenant Governor cannot forbear expressing his surprise at the conduct of the gentlemen who were passengers on board the "Lady Elgin." It is, perhaps, not to be wondered at, that as landsmen they should have acquiesced in the decision of Mr. Hoskins and Mr. Heath to abandon the wreck of the "Eagle Speed," but that on the 23d August, just after the unfortunate emigrants had been left to perish, they should have joined in writing congratulatory letters to Messrs. Hoskins and Heath (assuming the letters which were published in the "Hurkaru" newspaper of the 28th August, bearing their signatures* to be real and not forged), and in praising Mr. Heath for qualities the very reverse of those he displayed throughout the previous day, is not to be accounted for on any supposition which can reflect credit on the writers. Their conduct must be left to the judgment of their countrymen.

* G. J. Egerton.
W. Adey.
George Jackson.
C. S. Carlisle.
W. M. Smith.
H. C. Maitland.

19. The next person whose conduct is to be noticed is the chief officer, Mr. de Grouchy, who is excused on the plea of sickness. But the evidence taken before the Committee shows that he was well enough to take measures for his own personal safety, while there is not a sign of his having raised his voice against the abandonment of the wreck. He could offer a reward to the men who took the life boat from the "Lady Elgin" to bring away the captain from the wreck, and he was able to command the boat; but though he brought the captain away, he could not wait to fill the boat with emigrants, and when he had brought the captain on board the steamer in a state of exhaustion, he did not either return to the wreck or make a single attempt to save life, or to induce others to do so. As he holds a certificate from the Board of Trade, his conduct will be reported to the Board for such notice as they may think proper to take of it.

20. The second officer, Mr. Mathews, who also holds a certificate from the Board of Trade, is shown to have behaved in a most disgraceful manner, and to have set an example to the crew of cowardice and disobedience of orders. If he had not left the country, the Lieutenant Governor would have directed the institution of legal proceedings against him under Section 79, Act I. of 1859. As it is, he will be reported to the Board of Trade with a strong recommendation that he be deprived of his certificate.

21. Of the medical officer, Dr. Donaldson, it is to be said that he was suffering from illness, and was therefore unable to render any assistance; but in the opinion of the Committee, in which the Lieutenant Governor entirely agrees, he was at least bound to make a formal and strenuous protest against the abandonment of the coolies, who were in an especial manner under his charge. The Lieutenant Governor has already directed that he shall not be again employed

employed as medical officer in charge of emigrants, and from this order his Honor finds no ground in these proceedings to recede.

22. The boatswain, Thomas Lockart, is said by the commander of the "Eagle Speed" to have jumped over board contrary to express orders, and to have saved his own life by swimming to the steamer.

There can be no doubt that this man has rendered himself liable to punishment under Section 79 of the local Act; but as it would be necessary to charge a specific act against him, and as no such charge could be proved without the evidence of the commander, a prosecution would in all probability be unsuccessful. Moreover, supposing that a conviction could be obtained, there would be no moral advantage in bringing to legal punishment a man of the boatswain's rank, when his superiors, who are really far more culpable, have escaped it. His conduct and that of the seamen who so shamefully disgraced the name and character of British sailors, must be left to the reprobation of their countrymen. From these last must be excepted the two able seamen, William Maynard and William Wilson, and the four topases, Thomas Mills, Moses Smith, John Allsum, and W. Smith, who alone did their duty under very difficult and trying circumstances.

23. The conduct of the several persons implicated having been considered, it remains to deal with the recommendations of a general nature presented by the jurors on the trial of the pilot and by the Committee.

24. It is one of the duties of a pilot on going on board an outward vessel, whether in the Hooghly or in the Mutlah, to satisfy himself that the officers and crew are numerically sufficient and physically capable of performing their duty, and to refuse to move the vessel until the deficiency be supplied. The master attendant will be desired to enforce a strict observance of this duty, and to report whether any further rule is necessary for the purpose.

25. The employment of any but first class tugs to tow emigrant ships to sea is already absolutely prohibited. It was only on the representation of the pilot, that the "Lady Elgin" was in his opinion a first class tug for the Mutlah, and that her commander was specially acquainted with the channels, and on the special recommendation of the protector, that her employment on this duty was authorised.

26. The master attendant will be desired to report whether any, and what, further regulation is required to prevent tug steamers proceeding to sea either with outward-bound vessels in tow, or in search of vessels inward-bound, without a sufficient supply of coal.

27. The master attendant will also report on the question of placing an inner light at the mouth of the Mutlah and upon the other points connected with the navigation of that river, adverted to in paragraph 53 of the Committee's Report. The papers enclosed in Captain Reddie's letter, No. 2596, dated the 22d September last, show that many of the buoys are out of repair and the beacons blown away. This is attributed to the impossibility of thoroughly overhauling them last season, owing to the press of work thrown on the department by the cyclone of October 1864; and though the river surveyor considers that, with the exception of an additional second class buoy in the western channel, the channels of the Mutlah are well and sufficiently buoyed for navigation, it is clear that the complete examination and repair of the buoys is urgently required and must be undertaken at once.

28. The director of telegraphs has reported on the construction of a line of telegraph from Canning to the southernmost point of Halliday Island, and the Government of India has been requested to sanction its construction, so that the work may be commenced early this season.

29. On the whole, it appears that, though occasion has been properly taken from the wreck of the "Eagle Speed," and the lamentable loss of life that has occurred, to bring to notice all that on enquiry appears faulty in the arrangements either in the dispatch of emigrants, or for the safety of vessels navigating the Mutlah, with a view to the application of immediate and effective remedies, yet nothing can be more certain than that the calamity which has happened is in no way to be attributed to any such defects, and that, but for the imprudence and unskilfulness of the pilot, the want of judgment and presence of mind on the part of the commander of the "Eagle Speed," and the shameful misconduct of the master of the "Lady Elgin," the ship would in the first place not have been put in a position of danger; having been so placed she might easily have

been extricated; while, when once it became apparent that she was a wreck, every person on board might certainly have been saved. The "Lady Elgin" may have been, and no doubt was, unfit to tow the "Eagle Speed" to sea against wind and tide in such weather as threatened when she left Halliday Island; but no one knew better than the pilot himself the capabilities of the steamer, for whose fitness he had vouched, and it was clearly his duty, in the first instance, to have detained the ship at Halliday Island till the weather improved, and afterwards, when the hawser parted, either to have anchored on the spot or to have returned to his former anchorage. He was at no time uncertain of his position, and if there had been an upper light in the river, or if the condition of all the buoys had been perfect, the result would have been the same. It is not to the absence of a light or to any imperfection of the buoyage that the loss of the ship can be traced. A muster of the officers and crew at Canning might have led to objections being made to some of them on account of their physical condition; but it is proved that they were numerically sufficient, and that the loss of the ship is in no way owing to their physical condition, while it seems equally certain that even if all had been in a state of perfect health and strength, as indeed nearly all of them were, the want of judgment, decision, and self-possession in the commander, and the absence of discipline and ordinary courage among the majority of the officers and crew, would have led to the confusion on board the "Eagle Speed," the abandonment of the ship, and the sacrifice of helpless lives, just as they actually occurred. Above all, the shameful misconduct of the master of the "Lady Elgin" in neglecting, or rather refusing to anchor his steamer astern of the ship, and in afterwards, for utterly insufficient reasons, prematurely abandoning the wreck, must be regarded as the real cause of all the lamentable loss of life that occurred. A telegraph might have brought earlier help to the few who may have left the wreck on spars and other floating objects before and after she was abandoned, but to the mass of those who were left on the wreck when the steamer abandoned it, her departure was the immediate and certain cause of destruction. This flagrant act of moral delinquency is aggravated by the fact that the steamer, after going in the direction of the floating light to ascertain her position, passed the wreck on her way back at a distance of five miles without going near her to see if any further assistance could be rendered to the perishing emigrants, of whom hundreds were still left on board. It is to be hoped that compunction was felt at least by some on board the "Lady Elgin," when on the following morning she overtook the ship's boat in which the topases had succeeded in saving 34 lives besides their own, after the wreck had been abandoned.

From Captain *C. Burbank*, Protector of Emigrants, Calcutta, to *S. C. Bayley*, Esq., Officiating Secretary to the Government of Bengal (No. 773); dated 2 December 1865.

Sir,

I HAVE the honour to acknowledge the receipt of your letter, No. 6551, of 15th ultimo, with copy of a resolution recorded by his Honour the Lieutenant Governor of Bengal, on the disastrous circumstances attending the loss of the ship "Eagle Speed," and with reference to paragraph 14, requesting me to call on Mr. Marriott, the Emigration Agent for British Guiana, to explain why the life buoys supplied to the above ship were not properly covered.

2. In reply, I beg respectfully to submit the explanation* called for.

* No. 51, dated 29 Nov. 1865.

From *Hunt Marriott*, Esq., Emigration Agent for British Guiana, to Captain *C. Burbank*, Protector of Emigrants, Calcutta (No. 51); dated 29 November 1865.

Sir,

I HAVE the honour to acknowledge receipt of your office memorandum, No. 755, accompanying printed copy of a letter from *S. C. Bayley*, Esq., officiating secretary to Government of Bengal, in which you are requested to call upon me to explain why the life buoys of the late ship "Eagle Speed" were not properly covered.

In

In reply I beg to state that this is the first time it has come to my knowledge that the life buoys on board that vessel were not properly covered.

I had seen on a previous visit to that of the embarkation the life buoys in question, which were piled on each other, surmounted by two or more cork jackets. I do not recollect accurately counting the buoys, because they seemed to me to be not only sufficient but in excess of the requisite number for a vessel of her capacity. But the cork jackets, being an entirely new article on board, drew my attention to them; they were uncovered. I took up one of the jackets, and in doing so displaced the uppermost life buoy, and on replacing it I had an opportunity of seeing that it was efficiently covered and painted. On the embarkation visit I again saw these life buoys and cork jackets. They were then on a different place to where I had before seen them, viz., on the sky-light or on the ridge running along the upper part of the cabins. They were then more scattered about, giving me, at a cursory glance, an opportunity of a more minute inspection. I do not remember to have seen one in bad order, but the cork jackets again struck me, as before, from their naked and uncovered appearance.

I am fully aware that, as the charterer of the ship on the part of the Government I represent, it is my duty to elect suitable vessels, that they are staunch, sound, and well equipped, and entirely fit for the service; and that a selection having been made by me, that that vessel is incompetent to carry emigrants until she has passed through the ordeals of Lloyd's, or some other authorized surveyor; not only is that approval necessary to employ her, but my choice is subject to another test, that of the protector of emigrants and the medical inspector, whose province does not so much rest with the wholesome or safe constitution of the ship as to seeing that every minute detail regarding her capacities as an emigrant ship are suitable to the requirements of the law and regulations. These two last officers are especially on the part of the Indian Government, and I do not conceive in any way relieve me from any responsibility as to the suitability generally of my arrangements for forwarding emigrants. But the details are, as by law, left entirely with these two officers, and, as was the case in the "Eagle Speed," it is impossible to show how a greater amount of scrupulous investigation, with every petty detail regarding stores, their quality and quantity, could have been made than was made by them. I was present at the whole of it, and, though I cannot call to mind their examination of the life buoys, I feel assured that they were seen, and the impression of those officers must have been coincident with mine, viz., that they were good and serviceable.

This inquiry from his Honor respecting the coverings, &c. of life buoys will induce me to give them my special attention in future; but I cannot help respectfully thinking that some rough usage, during the awful period of confusion, must have torn their coverings, so as to induce the inquiry now under reply.

I trust to be forgiven for deviating from the tenor of your letter, if I take this opportunity of stating that at the time I wrote my letter of the 30th October ultimo I was in utter ignorance that a Commission of Inquiry had been held, irrespective of the Marine Court, which tried Mr. Mate Pilot Vardy; and I now for the first time find that it is on the proceedings of that Commission of Inquiry, which was especially appointed under the Merchant Seaman's Act, that his Honor the Lieutenant Governor's resolutions are written, and that the Commission not only find me culpable in not going to sea with the "Eagle Speed," but that I failed in my duty for not seeing that the commander mustered the crew in the presence of the pilot.

Now, it is impossible that this Commission could have read that section, No. 55, of Act XIII, 1864, which says that the pilot shall, before leaving the vessel, muster the crew, &c. I have, during seven years' practice in shipping emigrants, never deemed it essential that the agent, a landsman himself, could be of the least utility in mustering the crew and forming an estimate of their capacities for their respective duties, deeming such a duty so purely the province of the pilot, whose interests in navigating a dangerous river, and those of the captain in traversing long and distant seas, were the best guarantees to an efficient crew being present. I respectfully urge that the agent, beyond the general responsibility which he has by the charter party, is useless and obstructive in this muster, which I think should be made at the departure from the moorings, as also before the pilot leaves, by the pilot, a duty which might easily be enforced by a declaratory certificate. The other censure or finding of the Commission, respecting the agent having been pronounced on by his Honor the Lieutenant Governor, after my explanation, it is useless for me to dwell upon; but I cannot help feeling that, on trivial points utterly unconnected with the cause of the shocking loss of the "Eagle Speed," an inclination has been evinced by the Commission and master attendant to blame an agency, which I most unhesitatingly, yet respectfully, assert left no effort unmade, no thought unconsidered to secure the welfare of those embarked in her, and which has to lament the subversion of its hopes and the destruction of so many poor beings through the incompetency and selfishness of those to whom it so unfortunately entrusted them.

(Emigration.—No. 7149.)

From *S. C. Bayley*, Esq., Officiating Secretary to the Government of Bengal,
to the Protector of Emigrants.

Sir,

Fort William, 14 December 1865.

THE Lieutenant Governor having had before him your letter, No. 773, dated the 2d instant, desires me to point out, in reference to Mr. Marriott's explanation, that it is in evidence that on the occasion in question the life buoys let in the water, soaked, and went to pieces. His explanation in reality amounts to nothing more than this, that he saw the life buoys but did not inspect them closely, and noticed nothing wrong with them, and in the face of the lamentable proof of their inutility that was given by subsequent events, such an explanation cannot be considered satisfactory. It is of the greatest importance that these points of detail, in the efficiency of which many lives may depend, should receive a much closer and more regular scrutiny than the very cursory inspection with which the agent appears to have contented himself.

2. The Lieutenant Governor now desires that you will frame additional special rules for your own guidance and that of the agents, both in regard to the inspection of the life buoys and other means for the preservation of life in case of accident, and also as to the efficiency of the officers and crew, as directed in paragraph 13 of the Resolution of the 15th ultimo.

I have, &c.

(signed) *S. C. Bayley*,

Officiating Secretary to the Government of Bengal.

(Home Department, No. 5438.)

From *E. C. Bayley*, Esq., Secretary to the Government of India, to *S. C. Bayley*, Esq., Officiating Secretary to the Government of Bengal.

Sir,

Fort William, 30 December 1865.

YOUR letter of the 15th ultimo, submitting a copy of the resolution recorded by the Lieutenant Governor in connection with the loss of the ship "Eagle Speed" in the Mutlah, together with the voluminous correspondence on which his Honor's resolution was founded, having been laid before the Governor General in Council, I am desired to say that his Excellency in Council, after attentively considering all the circumstances connected with this sad calamity, as they are disclosed in the papers submitted, regrets that there are some points on which he is unable to agree in the conclusions at which the Lieutenant Governor has arrived.

2. The Commissioners appointed by the Lieutenant Governor to inquire into the causes of, and the circumstances attending the loss of the "Eagle Speed," seem to the Governor General in Council to have conducted their investigation, with one exception, fully, impartially, and ably. His Excellency in Council agrees with the Lieutenant Governor in considering that the decision of the Commissioners as to the seaworthiness of the "Eagle Speed" may be accepted without qualification. His Excellency in Council also sees no reason to dissent from any of the opinions expressed by the Commissioners and the Lieutenant Governor, in regard to the conduct of those on board the "Eagle Speed" and the tug "Lady Elgin," whose duty it was to endeavour in the first instance to save the ship, and afterwards to rescue from death the unfortunate coolies who were on the wreck. The Lieutenant Governor has indeed dealt so fully in his resolution with this part of the case, that the Governor General in Council thinks it unnecessary to lengthen this communication by himself reviewing in detail the conduct of the persons in question. Such examples of combined cruelty and cowardice are happily rare in the history of the English mariner; and it would cause his Excellency in Council the deepest pain if he were compelled to believe that the shameful abandonment of the wreck by its own officers, and by those of the "Lady Elgin," would never have taken place if the unfortunate passengers on

on board the "Eagle Speed" had been Englishmen instead of being natives of India.

3. The Governor General in Council likewise agrees generally in the remarks with reference to Mr. Marriott, the emigration agent, which are contained in his Honor's resolution, and in the letter addressed to the protector of emigrants forwarded with your subsequent communication of the 14th instant. But his Excellency in Council would observe, with advertence to a remark in the 14th paragraph of the Lieutenant Governor's resolution, that the responsibility of the protector is of a very different character from that which devolves on the agent. The former is appointed by Government for the express purpose of seeing that everything is done by the agent, and by others, which the law and the rules of Government require to be done in the interests of the emigrant coolies. The Governor General in Council further concurs with the Lieutenant Governor in considering that there is no ground whatever for attributing the loss of the "Eagle Speed" to any defects in the arrangements for enabling ships to navigate the Mutlah. As regards the absence of an inner light at the mouth of the river, this was expressly admitted by the jurors on the trial of the pilot.*

4. The points on which the Governor General in Council is unable to agree with the conclusions of the Lieutenant Governor, are points connected with the conduct of Captain Burbank, the protector of emigrants, previous to the sailing of the "Eagle Speed."

5. With reference to the condition of the officers and crew of the "Eagle Speed," the Lieutenant Governor has pronounced on Captain Burbank's conduct as follows:—

"Captain Burbank is condemned by the master attendant, Captain Reddie, for allowing the "Eagle Speed" to proceed on her voyage, when he knew from the commander that a part of the crew was intoxicated; * * * * * the Committee are of opinion that it was Captain Burbank's duty to see that the commander of the "Eagle Speed" duly complied with the rule obliging him to muster the crew in the presence of the pilot, and that he ought to have assured himself of their physical as well as numerical efficiency. On all these points Captain Burbank has submitted a full, but not altogether a satisfactory, explanation. Although there is no express rule requiring the protector to examine and inspect the officers and crew of an emigrant vessel, it is his duty to see that all rules are complied with. It is, therefore, to be regretted, that he did not see that the officers and crew were duly mustered by the commander in the presence of the pilot, and that he did not properly assure himself that they were in all respects efficient. At the same time it must be admitted that the responsibility for seeing that the officers and crew of a vessel are efficient, rests primarily with the pilot, and that, whatever may have been the physical condition of the crew when the vessel left her moorings, neither the loss of the ship, nor the subsequent mismanagement and abandonment of the wreck, is in any way to be attributed to that cause. According to Dr. O'Sullivan, there was nothing the matter with any of them which a few days at sea would not remedy, and, with the exception of one or two, who required trifling medical treatment, the whole crew was sound, though most of them were recovering from the effects of too much liquor. It is possible that, if the commander and chief officer had been in strong health, they might have conducted themselves otherwise than they did after the vessel struck, and have done more to save the lives of the emigrants; but the evidence does not satisfy the Lieutenant Governor that the physical condition of the officers, even if it had been more carefully inquired into by Captain Burbank, was such that, in the absence of an express rule, he would have been justified in detaining the ship if the pilot made no objection on that account."

6. The following passages from the Report of the Commissioners state their view of Captain Burbank's responsibility on this point:— * *

"* * * it seems pretty clear that the captain, although well, was not strong, having but recently recovered from sickness. The chief officer was altogether incapacitated by sickness. The doctor was sick with pleurisy and a broken rib, and there is little doubt that on leaving Halliday Island, not more than half the able seamen were at work. It will be well to say at once here that we consider that ship's crew was numerically sufficient, and that we are not of opinion that the loss of the ship is in any way attributable to their physical condition; neither do we think that, had the ship got to sea, she would, in ordinary circumstances, have been thereby endangered; but it is obvious that, under extraordinary circumstances, the lives of the emigrants were grievously imperilled by the physical condition of

* "Although it cannot be said that the lamentable disaster to the "Eagle Speed" was in any way attributable to the absence of an inner light at the mouth of the Mutlah River, it appears from the evidence that a light ship placed somewhere near the Ring Buoy might, under certain circumstances, be attended with much advantage; and the jury would, therefore, respectfully suggest the establishment of a second light ship for the consideration of Government."

of the men on whom those lives depended. In the emergency which happened, failing the captain and chief officer (said to be a first-rate man when well), the emigrants were lost men.

"In this case the officers and crew were not mustered and inspected before the emigrants embarked, or the ship hauled out of moorings. The question, of course, arises, on whom the responsibility of seeing that the crew is efficient lies.

"The responsibility of the captain and pilot cannot be contested. The emigration agent and the protector of emigrants both repudiate any responsibility in the matter.

* * * * * The protector says, 'I don't understand that my duties include any responsibility as to the number and capacity of the crew; there is a Rule, No. 19, providing for that duty; I received the List No. 6, ordered by the above rule, from the commander; I will put in the return. It is not part of my duty to muster the crew, and see that the provisions of Rule 19 are complied with. I knew that there were twenty-six men on board, but I did not know their rating or condition, with the exception that the captain informed me that he had the same number he came out from England with under engagement with the Emigration Commissioners; and again, further on, the captain gave me to understand that he meant the same strength.

"On referring to the rules for the guidance of all persons concerned in emigration, we find it laid down in Rules 14 and 15 that commanders are required to have crew lists prepared according to a given form, and to lodge them three days before the embarkation of the emigrants in the protector's office; and in Rule 19, 'that commanders are required to muster their crew in the presence of the pilot previous to the embarkation of the emigrants, in order that their efficiency may be ascertained.'

* * * * *

"In the rules provided for the guidance of the protector of emigrants, we find it laid down in Rule 5 that it is his duty to see 'that the ship is supplied with all necessities for the voyage'; in Rule 6 that the ship is 'in every way qualified to carry emigrants;' and in Rules 14, 15 and 19 (which are general rules), as already stated above.

"Reading the above rules together with Act XIII. of 1864, Section 46, Clause 5, and Sections 53 and 55, we are of opinion that it was also the duty of the protector (Captain Burbank), to see that the pilot and commander duly complied with the provisions of Rule 19.

"We may add that Section 3 of the standing rules for the guidance of pilots in the Hooghly and Mutlah, of which both the emigration agent and protector must be taken to be officially cognizant, directs a pilot to decline moving any ship, if he has reason to think that her crew is so weak, or otherwise so inefficient, as to be likely to cause unusual detention in taking her to sea.

"We therefore think the protector quite in error as to the scope of his duty in considering it not incumbent upon him to assure himself of the efficiency, physical as well as numerical of the crew.

"We also think it right to observe that the protector, by his own showing, took the captain's bare word for the fact that the number of the crew was up to the required standard, which appears to us hardly to argue a correct appreciation of the grave responsibility which attaches to the careful discharge of his office."

7. Captain Burbank, in a letter dated the 27th of October, has stated his own view of what it was his duty to do, and on a careful consideration of the case the Governor General in Council agrees with the Lieutenant Governor that neither the loss of the ship nor the subsequent mismanagement and abandonment of the wreck can be attributed to the physical condition of the crew; and though it is more difficult to say what the result might have been had the captain not been in weak health, and the chief officer altogether incapacitated, yet his Excellency in Council is not prepared to say that the physical condition of these officers, the captain being fit for duty, though not strong, was such as to require the protector to detain the vessel.

8. On the other hand, the Governor General in Council must express his opinion that Captain Burbank's misconception of his duty is more serious and more culpable than it has appeared to the Lieutenant Governor.

9. Captain Burbank says, in his letter above referred to, that to himself it is "perfectly clear that neither the letter nor the spirit of the law imposes on the protector any responsibility in respect of the condition of the crew."

10. Now Section 16 of the law relating to emigration says that the protector of emigrants "in addition to any special duties assigned to him by the Act, shall, so far as lies in his power, generally protect and aid with his advice or otherwise all emigrants, and shall cause all the provisions of the Act to be duly complied with." Section 46 of the law requires that the protector shall certify, before a vessel is permitted to be engaged for emigrants, that she is in all respects suitable for the carrying of emigrants. And by another section of the

the law, it is made the duty of the protector to be personally present at the embarkation of the emigrants.

11. Having regard to the position and the authority which it was thus obviously meant to assign to the protector, and still more to the general spirit and purpose of the law, it seems to the Governor General in Council to be plainly quite as much the duty of the protector to take cognizance of any cause calculated to make a ship unsuitable for the reception of emigrants which may come to his notice when he goes on board at the embarkation of the emigrants, as it is his duty to take cognizance of any such cause at the time of engaging the ship; and that Captain Burbank should deliberately maintain, as in effect he has done, that it is no concern of the protector to take notice of the inefficiency of the crew or of the officers, however plainly or to whatever extent such may appear, does certainly seem to argue, as suggested by the Commissioners, a most inadequate appreciation of the grave responsibility which belongs to his office. The Governor General in Council, therefore, concurs with the Lieutenant Governor in thinking it advisable that there should be in future an express rule declaring it incumbent on the protector (and also on the agent) to assure himself that the officers and crew of every emigrant vessel are numerically sufficient, and sound in health, before allowing the emigrants to embark.

12. But a far more serious point, upon which the Governor General in Council is unable to concur with the Lieutenant Governor as to Captain Burbank's responsibility, is with respect to the permission given to the "Lady Elgin" to tow the "Eagle Speed." It is to this point that reference was meant, when in a previous part of this letter, it was said that, with one exception, the Commissioners appeared to have conducted their investigation fully, impartially and ably. On this important point the Commissioners have contented themselves with saying—

"The steam tug is shown in evidence to have been incompetent to tow a ship of the size of the 'Eagle Speed' under the circumstances in which she was placed; but as the question of her employment appears to have been referred to, and decided by the Government of Bengal in the affirmative, no remark is necessary, further than that Mr. Pilot Vardy certified that he considered her a first-class steamer for the Mutlah, and that he preferred her to any other on account of the experience of her commander."

13. The Lieutenant Governor's judgment upon this point is briefly recorded as follows:

"His Honour attributes no blame to Captain Burbank for recommending, on the certificate of Mr. Vardy, the employment of the 'Lady Elgin' to tow the 'Eagle Speed' to sea."

14. The master attendant, Captain Reddie, on the other hand, has remarked with great severity on Captain Burbank's conduct in recommending permission to be given for the use of the "Lady Elgin." Captain Reddie says, that had he been referred to, he would never have allowed the "Lady Elgin" to tow the "Eagle Speed," and he attributes the loss of the ship partly to her being towed by a second class tug.

15. There is no room for question as to the inefficiency of the "Lady Elgin." The Lieutenant Governor, in his resolution, makes one point of his condemnation of the pilot, Mr. Vardy, that "he persisted in going to sea in tow of an inefficient steamer," that is to say, in the words of the Commissioners, after "it became apparent that the 'Lady Elgin' had not power to tow the ship out."

16. And again his Honour says, in another part of the resolution, "The 'Lady Elgin' may have been, and no doubt was, unfit to tow the 'Eagle Speed' to sea against wind and tide in such weather as threatened when she left Halliday Island."

17. The circumstances connected with the employment of the "Lady Elgin" were as follows:

She is classed as a second-class tug, and an order was very properly given some time since by the Government of Bengal that none but first-class steam-tugs should be used for towing emigrant ships; but early in August Captain Burbank wrote to the Bengal Government, and recommended that "as this vessel is the only one ever employed in the Mutlah, and as her commander is, in consequence, well acquainted with its channels, she may be employed in

towing emigrant ships to sea, although she only stands classed as a second-rate tug steamer, or until commanders of first-class tugs qualify themselves for the service."

18. Captain Burbank submitted, with this letter, a certificate from Mr. Vardy, the Mutlah pilot, as follows :

"I certify that I consider the 'Lady Elgin' to be a first-class steamer for the Mutlah, and that, on account of the experience of the captain, I would much prefer that she should tow the 'Eagle Speed' to sea."

19. The Secretary to the Government of Bengal replied to Captain Burbank thus :

"I am to convey to you the Lieutenant Governor's sanction to the employment of the 'Lady Elgin' in the Mutlah for the purpose of towing emigrant vessels to sea until commanders of first-class tugs are qualified for the above service."

20. The master attendant was not consulted regarding this order ; and, as noticed above, he has stated that, if he had been, the "Lady Elgin" would never have been allowed to tow the "Eagle Speed." Captain Reddie further says, that the reason given by Captain Burbank for recommending the "Lady Elgin" was frivolous, because a competent pilot, that is to say, a Mutlah pilot, might have been put on board a first-class tug.

21. Captain Burbank's reply to this is very unintelligible. He first appears to misunderstand Captain Reddie, and assumes him to have suggested the alternative of "a mere pilot being put in charge of a tug"; and then he says, that, even if this were of constant occurrence, "it can have no sort of bearing on the present argument. The commander of the tug,* was not incapacitated ; on the contrary, his special and unique qualifications led to his vessel being thought a desirable one ; and Captain Reddie, in asserting that a first-class tug should have been sent in charge of a competent pilot, simply evades the point at issue by ignoring the facts that are in evidence regarding first-class tugs at the time."

* i. e. the "Lady Elgin."

22. Thus Captain Burbank, it will be seen, does not himself rest his case on the vague and unintelligible certificate of Mr. Vardy that the "Lady Elgin" was "a first-class steamer for the Mutlah"; but he argues that the vessel became eligible because of the qualifications of her commander ; and he perhaps may mean to imply, by the concluding words of the above extract, that no first-class tug was to be had for service in the Mutlah. But it is needless to say that this, if the case, affords no palliation for the employment of an inefficient tug, though undoubtedly it should have exercised a strong influence on the question whether emigrant ships should be allowed to go from the Mutlah at all. On the whole, the Governor General in Council is compelled to say that he can see no sufficient excuse for the employment of the "Lady Elgin." The time of year gave no reason to feel confident of fine weather. On the contrary, the truth is that the "Eagle Speed" was allowed to be towed to sea, in the face of a regulation to the contrary, by a second-class tug, utterly incapable of towing such a vessel in weather "by no means unusual during the south-west monsoon." †

† See Presentment of jury who tried the pilot.

23. His Excellency in Council cannot regard the certificate of Mr. Vardy as affording any real justification for Captain Burbank's recommendation ; and he thinks it is deeply to be regretted that the Lieutenant Governor, on a recommendation so entirely unsupported by any reasonable explanation so far as the steamer itself was concerned, should have allowed an exception in favour of the Mutlah, especially at such a season, and apparently without consulting any responsible professional person, to a rule which he had thought it right to lay down for emigration from the Hooghly.

24. The employment of the "Lady Elgin" seems to the Governor General in Council, indeed, to have a close connection with the Lieutenant Governor's previous decision to allow of emigration from the Mutlah, for it seems that the "Lady Elgin" was the only steam-tug working on the Mutlah.

25. His Excellency in Council thinks it is very unfortunate that the Lieutenant Governor should have accorded sanction to emigrants embarking at Port Canning ; and he entirely approves of His Honor's subsequent order withdrawing that sanction. The Governor General in Council has no doubt that the Lieutenant Governor was mistaken in law when he ruled that Port Canning

"may

"may be considered constructively to be included in the port of Calcutta within the meaning of Section 7 of Act 13 of 1864." It is not enough to refer to Section 7 of the Act, which declares emigration unlawful except from the "port of Calcutta."

Section 59 provides, that "the master of every vessel conveying emigrants from the port of Calcutta shall proceed on his voyage, and depart with his vessel from Garden Reach, within 14 hours after the embarkation of such emigrants as shall have first embarked."

Section 60 enacts, that "every vessel sailing from the port of Calcutta with emigrants shall proceed from Garden Reach to sea under tow of a competent steamer."

Finally, Section 78 (prescribing penalties) provides that "if a master, sailing from the port of Calcutta * * * with emigrants on board, shall, without reasonable excuse, cause or allow his vessel to proceed from Garden Reach to sea, or to proceed any part of the distance between Garden Reach and sea, without his vessel being under tow of a competent steamer, or if such vessel shall not have left Garden Reach and proceeded on her voyage within the time prescribed in Section 59, the master of such vessel shall be liable to a fine not exceeding 1,000 rupees."

26. The above sections serve to place beyond dispute the meaning of "port of Calcutta," and it would have been better had the Lieutenant Governor sought the opinion of the Government law officers before he decided on adopting a construction of the Act so plainly at variance with its language.

27. I am desired to state that the Secretary of State will be requested, as suggested by the Lieutenant Governor, to bring the conduct of the officers of the "Eagle Speed" to the notice of the Board of Trade, and to recommend that the certificates of the master and the second officer be cancelled. The Governor General in Council observes, however, that if an inquiry into the causes of the shipwreck had been conducted under Section 4 of Act 15 of 1863, it would seem that the certificates of these officers might have been cancelled without reference to the Board of Trade.

I have, &c.

Secretary to the Government of India.

THE "EAGLE SPEED."

**COPY of the REPORT of the COMMISSIONERS
appointed to investigate the Circumstances
attending the Loss of the "Eagle Speed";
together with any PAPERS showing the action
of the Indian Government thereupon.**

(Mr. Milner Gibson.)

Ordered, by The House of Commons, to be Printed.
19 April 1866.

196.

Under 4 oz.

"LONDON" STEAM SHIP.

COPY of REPORT upon the OFFICIAL INQUIRY, ordered by the BOARD of
TRADE, into the Loss of the Steam Ship "LONDON."

My Lords,

Greenwich Police Court, 26 February 1866.

PURSUANT to your Lordships' directions, I have, in conjunction with Captains Harris and Baker, made inquiry, under the provisions of "The Merchant Shipping Act, 1854," into the loss of the screw steam ship "London," on the 11th of January last, in the Bay of Biscay, on her voyage to Melbourne.

The "London" was an iron ship built at Blackwall, in the county of Middlesex, in July 1864. She had two decks, three masts, ship rigged, with round stern; her registered tonnage being 1,428 $\frac{2}{3}$; her length from the fore part of the stem under the bowsprit to the aft-side of the head of the stern post was 267 feet 2-10ths; her main breadth to outside of plank, 35 feet 9-10ths; and depth in hold from tonnage deck to ceiling at midships, 24 feet 1-10th. She had two engines; combined power (estimated horse), 200. She was the property of Messrs. Charles Hampden Wigram, Clifford Wigram, and Robert Wigram, of Blackwall, to the extent of 56 shares; Franklin Allport, shipbroker, two shares; Charles Morgan, shipbroker, two shares; and Edward Martin, of Thurloe-place, Kensington, four shares.

The loss of this ship following so soon after her leaving port, and being attended by such a large and most lamentable loss of life, could not fail to cause an extraordinary degree of excitement, and consequently it has given rise to many reports and conjectures, very painful to the minds of the relatives and friends of the sufferers. Under the influence of these feelings, at the commencement of the proceedings, application was made by counsel on behalf of the friends of a passenger, who was lost in the ship, for permission to cross-examine the witnesses produced by the counsel managing the case, by appointment of the Board of Trade, but the permission could not be granted, the Act of Parliament not having given that power.

This decision has caused some dissatisfaction, as implying a want of due consideration for the feelings of relatives and friends. To remove erroneous impressions on this subject, it may not be out of place here to explain the nature and objects of these "formal investigations," and the mode of proceeding directed by the Acts.

By the 432-435 sections, part 8, of "The Merchant Shipping Act, 1854," the Board of Trade is empowered in certain cases to order a formal investigation to be made by two justices, or a stipendiary magistrate, assisted by a nautical assessor (now two assessors), and to appoint "a person to superintend the management of the case"; and the said justices or magistrate are directed to send a report to the Board, with a full statement of the case, and their opinion thereon. The investigation so to be made has two objects: first, under the 241st and 242d sections, part 3, where the matter for inquiry is, "Whether the loss or abandonment of, or serious damage to, any ship, has been caused by the wrongful act or default of the master or mate, holding a Board of Trade certificate," which is coupled with the power to suspend or cancel the

certificate; and secondly, under the 432d section, part 8, "Whenever any loss, abandonment of, or serious damage to, a ship, or any casualty causing loss of life shall have happened as therein mentioned, to inquire into the cause of such loss, &c."

In the former of these two investigations, there is something to be determined, viz., "the cancelling or suspending the certificate;" and in this case, therefore, the Act has provided for an appearance by counsel by directing that the master or mate "shall have full opportunity of making his defence in person or otherwise." In the latter investigation, on the other hand, there being nothing to determine, and no person on his defence, no such provision is made. In both inquiries the person to conduct the proceedings is "the person appointed by the Board of Trade to superintend the management of the case." And the Act gives the justices or magistrate no authority to substitute or appoint in addition any other person. If this is not deemed a sufficient answer, we may notice the utter impossibility of carrying on an inquiry in which so many persons would be entitled to take part—the relations and friends of all the sufferers, the owners or underwriters of goods, the owners of the ship, and other persons interested, for all would be equally entitled, and many, no doubt, would claim to have the same privilege. The only thing that can be done, and was done in this case, is to put all the questions that are suggested, and are at all relevant to the purpose of the inquiry. The direct object of the inquiry in this case is (as has been stated) the cause of the loss of the "London." Beyond this, however, there is an ulterior and important object, viz., to bring under the notice of the Board of Trade any facts or suggestions that may present themselves to our notice in the course of the examination, and which may seem to be of service in preventing the occurrence of a similar disaster in future, and thus to afford additional protection to life and property at sea.

In the conduct of this inquiry, in order to make it as complete as possible, the examination of witnesses has embraced the most minute particulars as to the condition of the ship, her hull, masts, sails, rigging, and boats, her machinery, both engines and screw, the weight and stowage of her cargo and coals, her crew, and in short, everything constituting her seaworthiness.

Upon this branch of the inquiry no fewer than 24 witnesses have been examined, six of them connected with the construction of the ship or her machinery, or in the stowage of her cargo; six others, surveyors, who have inspected and examined her either during her construction or on her going to sea; three others, emigration officers, who had to certify her for clearance on her going on her voyage; and the rest, experienced persons, and of practical knowledge in ship building, who have been called in to give their opinions, as experts. In addition to this body of evidence, all the plans, measurements, calculations, and particulars relating to the ship, her fittings, cargo, and stowage have been produced by the owners in the most unreserved manner. It will not be necessary at present to do more than refer generally to this large body of evidence, and to remark that it appears, from the replies of the witnesses to the question of the ship's condition on going to sea, that she was "in all respects a good vessel," to use the words of the surveyor of Lloyds', when reporting her to be classed A a 1 in Lloyds' List.

The next point for consideration is her loading. The evidence upon this point is contained chiefly in the examinations of the witness Johnson, the draughtsman to Messrs. Wigram, who produced the drawings of the ship, and marks her deep load line at 20 feet 3 inches mean draught, according to her calculated scale of displacement. By this scale he estimates the weight of the ship and cargo to be 3,412 tons. Supposing this calculation to be accurate, the surveyors, Mr. Wawn and Mr. Barber, and Mr. Miller, the ship builder, of Liverpool, give their opinion that the "London," at 20 feet 3 inches mean draught, was not too deeply loaded. Indeed, Mr. Wawn states that had he been employed to survey her for Lloyds' on her going to sea, he would have passed her had she been drawing 21 feet 3 inches. Against these opinions, however, on the other hand, must be set that of Mr. Wilson, a retired ship builder, of Liverpool, who thinks her deep load line ought not to have been higher than
18 feet

THE LOSS OF THE STEAM SHIP "LONDON."

18 feet 9 inches. But as this opinion is founded upon his general objection to the class of ships to which the "London" belongs, it is to be taken with that qualification. Mr. Wilson's authority is, however, of such weight, that it will claim further notice hereafter.

Next in importance to the weight of the cargo is its stowage. On this subject, the chief and almost the only witness, is the stevedore, Cole. Captain Foster, the emigration officer in London, on his first inspection of the ship, whilst taking in her cargo, saw only a part of the dead weight, about 150 tons, which, he says, was stowed in the correct and proper manner. On his second inspection, the hold was full. The manner in which the ship was stowed is particularly stated in the stevedore's evidence, and seems to have been unobjectionable.

Such is a brief summary of the evidence regarding the ship, cargo, and stowage, up to her departure from Gravesend, where she was inspected by the emigration officer, Captain Lean, who considered her to have fulfilled the requirements of the Passengers' Act, and as being "perfect in every way," and accordingly certified her for clearance.

On the 30th of December, the "London" left Gravesend for Plymouth, to embark the remainder of her passengers. On the voyage round, she appears to have encountered very boisterous weather, but arrived safely at Plymouth without anything of moment occurring. At noon of the 5th of January she anchored in Plymouth Sound. Here she was inspected by Captain Stoll, the emigration officer of the port, who found everything correct, and gave the usual certificate. The evidence of Captain Stoll is deserving of attention as to certain matters which have been made the subject of censure on the master, Captain Martin. The first of these is the going to sea on the night of the 5th, when the weather is alleged to have been unfavourable and threatening. Captain Stoll gives the readings of the barometer on the 5th and 6th, the day the "London" left Plymouth, and the day after, by which it appears there was a rise of about three-tenths of an inch in those days, which corresponds with the state of the weather as reported by those on board the ship. He therefore properly concludes that the weather was very favourable. Again with regard to the stowage of coals on deck, and the alleged deep loading of the ship, Captain Stoll says he did not consider that the coals in the least interfered with the navigation of the ship, or the comfort of the passengers; and as to her loading, that he took her to be in good trim, "not too deep;" but, he adds, "of course every steam ship is a little deep on leaving port, otherwise her fan would very soon be out of water." The third point to which Captain Stoll's evidence refers is, "the practice usual in merchant ships in the winter months to go to sea with their royal masts on end, and top-gallant yards across," which he condemns as imprudent. This was the case with the "London," and he adds that since her loss, a Government emigration ship went out of Plymouth with all her top gear, and he could not prevail upon the captain to send his top-gallant yards on deck, though the weather looked very threatening.

Soon after midnight, on the morning of Saturday the 6th of January, the "London" steamed out of Plymouth Sound, having a crew, officers and men, all told, of 89 in number, of whom 34 were A.B. seamen, four ordinary seamen, and two boys. She had a list of 59 first-class, 52 second-class, and 52 third-class passengers; in all 163, making a total of 252 persons on board.

Her master, Captain Martin, was a skilful and experienced seaman, and had commanded the ship from her first going afloat in 1864. His high professional character, and his great self-possession, manifested by his conduct in the trying circumstances in which he was placed, afford reasonable ground to believe that there was no defect of ability, vigilance, or energy on his part; and this ought to be borne in mind when, owing to the very defective state of the evidence as given by the survivors, there may be considerable difficulty in forming a judgment as to the cause or causes leading to the loss of his ship.

The evidence of what happened on board the "London" after she left Plymouth is very imperfect and confused. One thing, however, is agreed on by all

all the seamen who were examined, that she was never put before the wind till the forenoon of the day she went down, when she wore round on the starboard tack, in order to lower the port cutter, the boat in which the survivors left the ship. It is satisfactory to be assured of this, as severe reflections have been made upon this supposed imprudent act of the master. For the first two days after leaving Plymouth, the weather was moderate. On Monday, the 8th, it began to blow strong, the ship being then under steam, head to wind. At 6 p.m. on that night the mizen stay sail, fore stay sail, and maintop mast stay sail were set, but the last-named sail was carried away the same evening.

Next day, the 9th, at 9 a.m., the jib boom was carried away and shortly afterwards the foretop mast, top gallant mast, and the main royal mast—the jib boom going overboard on the starboard side, and the masts hanging down aft.

They tried to get in the jib boom, but did not succeed till the next day; the foretop mast was secured, but the main royal mast left swinging. The gale continued all Tuesday, and at 2 a.m. on Wednesday, the 10th, the ship was steamed round on the port tack, and the stay sails hauled down.

About 1 p.m. of that day the jib boom was got on board and secured to the after part of the fore rigging, and shortly afterwards a part, about 25 feet, of the flying jib boom was got in and laid along the combings of the engine-room hatchway, one end being made fast to the stanchion of the after hatchway. From 4 p.m. till 11 p.m. that evening it blew a very heavy gale, and the ship laboured much, making heavy lurches to windward, and taking in green seas over her port side. At 11 p.m., from some cause not perfectly ascertained, the engine room skylight, which was battened down, was carried away, and in a very few minutes the engine-room filled with water up to the fire bars, and put out the fires. We have no conclusive evidence of the fact, but it is quite possible that the flying jib boom might have been floated by the water on deck, and have contributed to unship the skylight. Attempts were made to recover and replace it, but without success; and the hatchway was filled up with beds, mattresses, and sails built up on the top of the engine for the purpose of keeping out the sea.

During the night, as the water was continually gaining ground, and the engine pumps could not be worked after the fires went out, the passengers were engaged assisting the crew in baling out the water from the after part of the ship, and working the deck pumps which had been rigged as soon as possible after the extinction of the fires.

At 5 a.m. of the 11th, the stern ports were driven in, and water came down in large quantities through them into the lower saloon. At this period Captain Martin seems to have given up all hope of saving the ship, and told the ladies that nothing short of a miracle could save them. The scene from this time, as described very simply in the evidence of Mr. Edwards, the midshipman, is painfully interesting, and exhibits in the behaviour of many of the passengers the power of religious feelings in calming the terrors of this most appalling form of death. A few minutes before the ship sunk, the port cutter was lowered, and three passengers and 16 of the crew, including Mr. Edwards, in all 19 persons, got into her, and cleared the ship just as she was going down. Two hundred and thirty-three persons, passengers and crew were lost with her; the 19 survivors were picked up next day by an Italian barque, and carried to Falmouth.

As the carrying away of the skylight and possibly, in part, also the breaking in of the stern ports, may be considered as the proximate cause of the loss of the ship, the construction of these parts has been carefully inquired into, and a particular description of the skylight and stern ports appear in the evidence of Mr. Wawn, and a sketch of each accompanies this Report. The witnesses who have been examined as to the construction of the skylight, are of opinion that with proper fastenings and tarpaulings, battened down, it was secure from any ordinary violence of the sea. The witness, Mr. Baskcomb, speaking of the stern ports of the "London," says, they were such as are ordinarily used, but recommends that they should be fitted in rabbets on the outside, like half ports, and the witness, Mr. Wawn, approves of that suggestion.

This

This is a summary of the evidence in this case upon which we were required to report our opinion as to the cause of the loss of the "London." As to the immediate cause of loss, there can be little doubt that it was entirely owing to the sea getting into the engine-room and extinguishing the fires. Had that not happened we have every reason to believe that the centrifugal pump, throwing 4,000 gallons a minute, would have cleared the ship of any quantity of water that might from any ordinary cause have found its way into her. It is not at all clear whether all the sea that put out the fires came in through the hatchway, when the skylight was carried away, or whether the same violent action of the sea, which carried away the skylight, might not have caused some other unobserved injury to the ship.

Indeed, it is hardly probable that so large a body of water could have come in so suddenly through the hatchway as to fill the engine-room five feet deep with water in the short space of time (three minutes) mentioned by the second engineer. Though the hatchway is a large opening, 12 feet 6 inches by 9 feet 6 inches, a great portion of that space is occupied by the head of the engine, which stands immediately under the opening, and greatly diminishes the space through which the water could come down. Assuming that the sea which put out the fires all came in through the hatchway, the next question will be, how the skylight was carried away, whether by any imperfection in its construction, or carelessness in not keeping it properly fastened down. As to its construction, we have satisfactory evidence that if covered with a tarpauling, perfectly battened down (as was proved to be the case), and the fastenings properly secured, it was a sufficient protection from the sea, unless from any extraordinary accident happening. We have no positive certainty whether the fastenings inside were properly secured: the second engineer says they were. Where a ship is overpowered by the force of the wind and sea it is always the weakest point that gives way. There is no evidence enabling us to say whether the fastenings of the engine-room skylight were her weak point. In the absence of proof on these main points, it is needless to go into a particular consideration of the stowage of coals on the deck, and the going to sea with all the top gear aloft, as being remote causes of the loss. In both these particulars the "London" followed the usual practice of other vessels engaged in the same line of trade. We think the practice a bad one, and hope that this inquiry may have the effect of inducing caution for the future.

There were several points in the evidence as regards the occurrences at sea, such as the carrying away the masts and booms, the delay in clearing away the wreck, the loss of the boats, and other matters relating to the management of the ship, which might have been more satisfactorily explained, had the master, or any of the officers of the ship, survived to explain them. In the absence of such explanation, it is but reasonable to give the master credit for the character he always possessed, of being an able and careful seaman, who would not be guilty of any great default of management.

In the course of the inquiry, some suggestions have been offered regarding the covering of engine-rooms, to protect them more effectually from the sea, and at the same time not to interfere with the free circulation of air. A particular arrangement for this purpose is given in the evidence of Mr. Barber, of which a drawing is sent with this Report. This is a subject of importance, no doubt, in ship building, but not specially belonging to this case. All the hatchways of the ship ought to be made as strong as her deck, and when occasion requires it, secure from the intrusion of the sea. This may be done in a variety of different ways, more or less simple, the simpler the better. If the combings are sufficiently strong, and raised to a sufficient height from the deck, a strong grating of wood or iron, not too close in the bars to impede circulation, with a tarpauling ready at hand to be battened over it in bad weather, will answer every practical purpose in case of the skylight being washed away.

Before concluding this Report, some notice should be taken of the evidence of the witness, Mr. Thomas Wilson, of Liverpool. He considers the present system of ship building, as to the proportions of length, breadth, and depth, a most objectionable one, and that unless great judgment is used in loading such

ships, they will be very dangerous at sea. Mr. Wilson has retired from business for some years, and no doubt the change must be very striking to him betwixt the proportions of ships built in his time and the present, when the length in proportion to width is as 8 and even 10 to 1. This is no doubt a most important subject, and may engage the attention of practical ship builders.

The rule of calculating the deep load line by the scale of displacement may be a safe one as regards the ship's ability to carry her cargo in safety, but not as to her ability to carry her load lightly, so as to make her an easy ship for the conveyance of passengers. In calculating the deep load line, the question of buoyancy is a most material element as regards the behaviour of the ship in bad weather; and, in fact, were the deep load line permanently marked on all vessels, we might not have to deplore the annual loss of life that occurs from presumed over-loading. This is a subject which seems deserving of consideration.

I have, &c.

(signed) *James Traill.*

We concur in this Report.

(signed) *Hy. Harris.*
R. B. Baker.

To the Lords of the Committee
of Privy Council for Trade,
&c. &c. &c.

"LONDON" STEAM SHIP.

**COPY of REPORT upon the OFFICIAL INQUIRY
ordered by the BOARD of TRADE, into the Loss
of the Steam Ship "London."**

(Presented to Parliament by Her Majesty's Command.)

*Ordered, by The House of Commons, to be Printed,
5 March 1866.*

8y

Under 1 oz.

"LONDON" STEAM SHIP.

**COPY of EVIDENCE taken at the OFFICIAL INQUIRY ordered by the BOARD
of TRADE into the Loss of the Steam Ship "LONDON."**

Board of Trade, }
March 1866. }

T. H. FARRER.

Mem.—The Report upon the Official Inquiry is printed in Parliamentary Paper, House of Commons, No. 89, of the present Session.

(PRESENTED TO PARLIAMENT BY HER MAJESTY'S COMMAND.)

*Ordered, by The House of Commons, to be Printed,
23 March 1866.*

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George Barber	Shipwright Surveyor to Board of Trade	3, 34
Thomas Wm. Wawn	Surveyor to Lloyd's Register of British and Foreign Shipping Assurance	3, 34
Samuel Smith	Shipwright in service of Messrs. Wigram	5
Thomas Harding	Foreman to Messrs. Humphreys and Tennant, Engineers	5
Isaac Cole	{ Ship Rigger { Stevedore	6 13, 14
Thomas North	Foreman Mast-maker and Boat-builder to Messrs. Wigram	6
James Sedgwick Lean	Government Emigration Officer	6, 11
Robert Maxwell	Outdoor Foreman to Messrs. Humphrey & Tennant	7, 11
William Bundock	Sailmaker and Ship's Husband to Messrs. Wigram	8
Peter John Reeves	General Surveyor of Shipping under Emigration Commissioners	9
Samuel Tom Cornish	Surveyor ditto ditto	10
Alexander Gunn	Clerk in office of Registrar General of Seamen	10
John Thomas Forster	Staff Commander in Navy, and of the Emigration Office, London	10, 11
Edward Humphreys	Engineer	11
John Luke Richard Stoll	Emigration Officer at Plymouth	12
Henry Caulier	Principal in Searcher's Department, Long Room, Custom House	14
George James Thompson	Trinity House Pilot	14
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Description of - - - - -	1	Ordinary height - - - - -	32
Two of iron (bags of cork placed under thwarts) - - - - -	2	Four inches above covering-board - - - - -	32
400 cubic feet in excess of requirements of Act - - - - -	2	In Her Majesty's iron ships, 15 inches (Barber) - - - - -	34
Carried one more than compelled by law - - - - -	6	Considering there was a house on the deck of the "London," and therefore not so much space for water to flow, combings should be 15 inches high (Baskcomb) - - - - -	33
Life, carried away - - - - -	15	Too low (Cooper) - - - - -	35
Starboard (pinnace), lowered and sank - - - - -	18	Ditto (Miller) - - - - -	36
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BULWARKS:		HATCH SKYLIGHT (Engine-room):	
Height of (5 feet) - - - - -	1	Description of - - - - -	1
" 3 ft. 3 in. from covering board - - - - -	32	Bars of, sufficient to resist heavy sea, if tarpauling covered over, and battened down (Gladstone) - - - - -	1
" from deck to top of rail, 5 feet - - - - -	32	Ditto - - - ditto - (Wawn) - - - - -	5
CANT , at entrance of upper saloon, 12 inches high by 5 feet thick - - - - -	32	Washed away - - - - -	16
CARGO:		Lying on starboard side - - - - -	19
Dead weight, 350 tons iron - - - - -	10, 31	Smashed to pieces - - - - -	20, 23
Stowage of - - - - -	10, 13	Battened down - - - - -	20
With "London's" fine lines and heavy canvas, considers she ought not to have carried a cargo to make her float deep (Sir Daniel Cooper) - - - - -	35	Lying on port side, whole, after having been blown off - - - - -	23
Stowed nearly solid (Wilson) - - - - -	36	Ditto, on starboard side - - - - -	28
COALS:		Not unsafe - - - - -	34
Constructed to carry 370 tons - - - - -	3	Rabbit of, not sufficient without clamps or metal flaps - - - - -	33
Had 50 tons, in bags, on upper deck, on leaving Gravesend (would be consumed in three days) - - - - -	7	If neglected to be fastened, such an accident as happened to the "London" likely to occur - - - - -	33, 36
On leaving Plymouth, coals on deck made up to 50 tons, in bags placed round engine-room hatch and steam chest - - - - -	12, 15	If properly fastened, is at a loss to account for its being dislodged by the sea (Barber) - - - - -	35
Did not interfere with navigation of ship or comfort of passengers (stowed four bags lengthways, four deep, four wide - - - - -	12	Ditto - - - ditto - (Galloway) - - - - -	38
On former voyage carried coals in same manner - - - - -	12	Generally not sufficiently protected (Miller) - - - - -	36
Fifteen tons of, carried in fore peak - - - - -	13	JIBBOOM:	
Quantity on deck on 11th January - - - - -	15	Carried away - - - - -	17
Washed about deck, and stopped up scuppers - - - - -	15, 26, 29	Got inboard, and lashed to mast - - - - -	17
Should not be stowed on deck of any seagoing steamer (Wilson) - - - - -	36	Flying; taken inboard, and placed alongside of engine-hatch combings - - - - -	20, 29
CONSTRUCTION of ship (<i>vide</i> "Ship").		Ditto; lashed - - - - -	21, 22
CREW , had an excellent (Lean) - - - - -	7	Ditto; not fastened, striking against engine hatch - - - - -	23
Number on leaving Plymouth, 89 - - - - -	40	Ditto; totally adrift, and striking against bulwarks and hatch - - - - -	29
Included fifteen foreigners - - - - -	10	LOAD LINE:	
Twenty-one sick and injured - - - - -	30	Assuming the "London" to have been loaded to 20 ft. 9 in. she would have been seaworthy (Wawn) - - - - -	5
COMBINGS of hatchways (<i>vide</i> "Hatchways.")		Might have gone a foot deeper than on drawings (Wawn) - - - - -	5
COURSES steered; head to wind, N.N.E., on 10 January - - - - -	37	Would have certified her (on a winter passage to Australia), if drawing 21 ft. 3 in. (Wawn) - - - - -	5
ENGINES:		She had 8 feet freeboard amidships on leaving Gravesend (Lean) - - - - -	7
200-horse nominal power - - - - -	3	Draught of water on leaving East India Docks, after everything had been put on board, 20 feet forward, 20 ft. 9 in. aft - - - - -	14
Would drive ship 8 to 8½ knots, ship drawing 20 ft. 6 in. - - - - -	7	Ditto, on leaving Gravesend, 19 ft. 9 in. forward, 20 ft. 9 in. aft - - - - -	14
Piston-rod of; works to top of combings of hatch - - - - -	7	Mean draught on leaving docks, 20 ft. 3 in. - - - - -	31
Stopped 7 a.m., 8th January - - - - -	17	Mean deep load line, amidships, 20 ft. 6 in. - - - - -	32
Started 5 p.m. ditto - - - - -	15	Would have placed her deep load line at 21 feet, and could have been laden to that with safety (Barber) - - - - -	34
Started full speed 3 a.m. of 10th January - - - - -	16	Had appearance to the eye of being deeply laden on the first voyage (Cooper) - - - - -	35
Room fires put out by sea - - - - -	18	Should have fixed the deep load line at 21 feet, which would leave 5 ft. 3 in. freeboard (Miller) - - - - -	36
Donkey-engine fire put out - - - - -	24	Too high up by 18 inches; would have given her 18 ft. 9 in. (Wilson) - - - - -	37
Donkey-engine fire relighted - - - - -	24	Ship low in water (Benson) - - - - -	38
HATCH leading to second-class Saloon:		MASTS:	
Water came down, lids not fitting tight - - - - -	27, 28	Description of - - - - -	2, 6
Water came in incessantly, although nailed down - - - - -	28, 29, 31	Not overmasted (Gladstone) - - - - -	2
HATCH of Engine-room:		Ditto - - (Barber) - - - - -	34
Dimensions, 12 ft. 6 in. by 9 ft. 6 in. - - - - -	1	Ditto - - (North) - - - - -	6
Flat covering on, would not impede the engines - - - - -	3	It is usual in winter months for merchant ships to go to sea with royal masts on end, and topgallant yards across, but not men-of-war. Captain Stoll, the emigration officer at Plymouth, is astonished at the custom, and does not think it a prudent course, though a universal one - - - - -	12
Suggestions as to covering, &c. (Barber) - - - - -	3	Considers it would be more prudent and snug for ships in winter months to go to sea with stump topgallant masts instead of long masts - - - - -	13
Ditto - - ditto - - (Galloway) - - - - -	38	Carried away - - - - -	15, 17
Mr. Barber's suggestions could only be carried out in spar-decked vessels (Wawn) - - - - -	4	Wreck of, swinging about - - - - -	29
Suggests a wooden covering (Wawn) - - - - -	5	Considers the "London" overmasted (Wilson) - - - - -	36
Considers Mr. Barber's plan has not been adopted as a protection to the engine-room, but to prevent heat and steam from reaching passengers on deck (Wawn) - - - - -	5		
Should be as strong as the deck (Forster) - - - - -	11		
Should be made in sections - - - - -	34		
As a precaution, recommends gratings or dead-lights (Baskcomb) - - - - -	33		
Ditto - - - ditto - - (Wawn) - - - - -	34		
Covered with tarpauling sufficient protection under ordinary circumstances (Wawn) - - - - -	34		
Iron gratings for; see no advantage in them (Miller) - - - - -	36		

	PAGE		PAGE
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“London” allowed to carry 400 - - - - -	2	Did not rise to the sea (Cooper) - - - - -	35
Number of, 163, on leaving Plymouth - - - - -	39	Should call her a dry ship (Cooper) - - - - -	35
		Deck not clear of water - - - - -	29
PACKAGE, refused to be taken by Captain Martin - - - - -	32	Fair-proportioned (Baskcomb) - - - - -	33
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PUMPS :		Good construction - - - - -	33, 34
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Centrifugal, capable of discharging 4,000 gallons of water		Dimensions of, favourable as compared with several able	
per minute - - - - -	11	Transatlantic ships (Barber) - - - - -	34
		Not a sharp ship - - - - -	34, 35
RIGGING :		Unusually strong, and equal to her class (Wilson) - - -	36
Description of - - - - -	6	Length and depth too great for beam (Wilson) - - -	36
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List of - - - - -	8	thick (Wawn) - - - - -	4
Were of best Irish flax - - - - -	9	Height to covering-board, 16 inches - - - - -	32
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Not the practice to send storm sails - - - - -	9	Where so, would make combings higher - - - - -	34
Considered efficient by pilot - - - - -	15	Passed a ship, as surveyor to Board of Trade, with (Barber)	
Mizen stay carried away (Hart) - - - - -	20	Objects to, of the depth of the “London” upon weather	
Mizen stay standing when ship went down (Daniels) - -	21	deck; prefers gutter-ways (Barber) - - - - -	34
Spanker blew away - - - - -	24	Would not have, in iron ships (Miller) - - - - -	36
Should have carried storm try sails (Wilson) - - - - -	37	Considers that one of the causes of the “London” foundering	
		(Miller) - - - - -	36
SCUFFERS :		STERN PORTS :	
Five on each side of ship - - - - -	1	Description of - - - - -	2
Blocked up with coal - - - - -	22	Lower part of, 8 feet from water-line, assuming she drew	
If blocked up 16 inches of water would stand in water-		20 ft. 9 in. - - - - -	2
ways before it could get out - - - - -	32	Strong enough for a ship of her class - - - - -	2
And water-ports (if relieved) would be sufficient to dis-		Broken in on morning of 11th January - - - - -	18, 20
charge freely the water that could come into the ship		Of “London” such as ordinarily used (Baskcomb) - - -	33
(Baskcomb) - - - - -	33	Recommends that they should be fitted in rabbets on out-	
		side, hinged like half ports (Baskcomb) - - - - -	33
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SHIP, CONSTRUCTION OF :		WATER PORTS :	
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Was constructed better than required by Lloyd’s Rules -	4	2 ft. 6 in. from covering-board - - - - -	32
Never before wind - - - - -	18	Iron ships require a greater number than wooden ships	
Except just before she went down - - - - -	23, 24	(Miller) - - - - -	36
Steamed round on port tack during watch from 12 to 4 a.m.			
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MINUTES OF EVIDENCE.

INQUIRY into the Circumstances attending the Loss of the Screw Steam Ship "London," on the 11th of January 1866, in the *Bay of Biscay*, made by direction of the Board of Trade, by *James Traill*, Esq., Stipendiary Magistrate, assisted by Captains *Harris* and *Baker*, acting as Assessors.

Greenwich Police Court, 29th January 1866.

29 January 1866.

GEORGE JOSEPH GLADSTONE, Sworn:

I RESIDE at Blackwall. I am Shipwright Surveyor to the Board of Trade, and Senior Surveyor for the Port of London. It is part of my duty to survey passenger steam-ships occasionally during their construction. I go, from time to time, at no stated periods. I saw the ship "London" while she was building; I first saw her while she was in frame. She was the property of the Messrs. Wigram & Sons. This book contains the official entries respecting the ship, made by myself. I went, I should say, four different times to the yard during the building up to her launching. I saw her before she was in frame, when in frame, when the deck was laid, and before she was launched. According to my judgment the materials with which she was constructed were of the first quality: the materials were angle-iron frame, iron beams, stringer plates and kelsons; the plating of the bottom was of iron; the kelsons were plate kelsons. The garboard streak plates were 7-8ths of an inch thick; the streaks above the garboard streaks, for 13 streaks up, were 3-4ths of an inch thick, and from thence to the gunwale 11-16ths of an inch. She was double riveted from keel to gunwale; all her fastenings were sound and good, with stringer plates to all her decks, and beams properly fastened. She had four bulkheads, four compartments, two before and two abaft the engines. The dimensions of the engine-room hatch were 12 ft. 6 in. by 9 ft. 6 in. I cannot speak accurately to that only from the plan produced, which I did not take myself. I measured the engine-room hatch when she was new, and to the best of my recollection it was 12 ft. 6 in. by 9 ft. 6 in. The combings were 16 inches high from the deck, and 5 inches thick, and were of teak; the skylight was a saddle skylight, with thick plate-glass top in wooden frame, and protected with a brass or galvanized iron grating; the fastenings were of brass, thumb-screws on the inside; the fastenings were on the inside of the combings; there were three other openings in the deck. She had a poop and forecastle; it was all open space between the engines and the skylight; there were fore, main, and after-hatches, a scuttle forward, and companion aft; her bunker shoots were placed on the upper deck; they had no combings round them; the shoots were flush with the deck, and about 18 inches in diameter; the lid of the shoot fell into a rabbet, and was then secured with white lead. It appeared to me that in the event of bad weather the engine-room was sufficient. I considered that the bars of the skylight were sufficient to resist a heavy sea, with a tarpauling covered over and battened down. Her bulwarks were 5 feet in height, the area of the upper deck was 3,226 feet, and the poop-deck 2,036 feet. The hatchway of this ship was, in my opinion, quite sufficient for the purpose intended. Above the covering boards were hinged ports for the escape of water from the upper deck; there were four ports and two gangways, and five scuppers on each side of the ship, leading direct out of the ship, with a flange inside and out. The accommodation for fore-cabin passengers was on the main deck, before the main hatch; there was space for 130 in hammocks, and 128 in berths; together, 258. The accommodation for after-cabin passengers was on the poop, and steerage, aft, between decks; there were 132 berths, and 10 in space, making together 142. The ship was ventilated with ports and scuttles between decks, and hatches on the upper deck. She had three bower anchors, a stream anchor, and two kedges; two bower cables of 300 fathoms, six hawsers and warps, two suits of sails, and two patent pumps, fitted on deck, and worked by hand with a winch; the steering gear was all complete. She had rockets, blue lights, cannon, powder, two signal guns, six life-buoys, and seven boats, and a set of tarpaulings for all the hatches and skylights. The boats were as follows: the jolly-boat, 24 feet in length, 5 ft. 10 in. wide, 2 ft. 3 in. depth, and contents 314 cubic feet; there were two quarter cutters, one 26 feet long, 7 feet wide, and

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29 January 1866. 2 ft. 8 in. deep, contents 484 cubic feet; one ditto 26 feet long, 6 ft. 1 in. wide, and 2 ft. 6 in. deep, contents 395 cubic feet; there was an iron boat, 26 feet long, 8 ft. 1 $\frac{1}{2}$ in. wide, 3 ft. 3 $\frac{1}{2}$ in. deep, contents 695 cubic feet; there was another boat, also of iron, of the same dimensions. I saw those iron boats when they were ready for launching, and I called the attention of the Messrs. Wigram to them. I said I did not like iron boats, and suggested that large bags filled with cork should be placed under the thwarts, of sufficient size to make the boats buoyant. My suggestions were adopted; I saw it done; also, two sets of davits were fitted complete for those boats: they were carried abaft the main rigging, at the break of the poop. There were also two life-boats, each 26 ft. 1 in. long, 7 ft. 2 in. wide, and 2 ft. 8 in. deep, contents 500 cubic feet each; the total number of boats being seven, and cubical contents 3,583 feet, which I think is about 400 feet in excess of the requirements of the Merchant Shipping Act. Before her voyage it was necessary that she should have a certificate from the Board of Trade, which is granted on my declaration. I last surveyed the "London," in dry dock, on the 4th of last December, and completed my survey on the 22d of that month, and the certificate granted by the Board of Trade would be in operation for six months from its date. I surveyed her also in June 1865. My declaration then was that she had all the equipments and requirements of the Board of Trade. I was of opinion when I made those declarations that she was as fine a ship as ever left the Port of London, both as to materials, workmanship, and equipment; also as to her proportions, there was nothing in her proportions that, in my opinion, affected her seaworthiness. She had as much beam in proportion to her length as ships of that class generally have; her length was about 7 $\frac{1}{2}$ times her breadth.

By Captain *Harris*.—Her height between decks was 7 feet, her engine-room was open to the main deck, protected with combings and rails round; the combings were about 10 inches from the deck. She had an elliptical stern, with, I think, seven stern windows under her poop-deck. They were protected with a sash and plate-glass windows, and a deadlight, 2 inches thick, which slid down like a shutter, I think made of fir or teak. The size of the windows was about 2 feet 4 inches high, and 2 feet broad; the deadlights worked in a groove; there were five that moved up and down, the other two were sham lights; the space between the windows was about a foot. Assuming that she drew 20 feet 9 inches aft, the lower part or sill of the windows would be about 8 feet from the water-line. I saw her when she was masted; she had iron lower masts and wooden topmasts, her bowsprit was of iron, her topmasts and jib-boom of fir. The mizenmast was also of iron, stepped on to the orlop beams. A 96 feet 8 inch foremast would be in proportion to her tonnage, the diameter about 32 inches. I should not call that being overmasted. She had four bulkheads fitted with sluice valves working from the main deck in the usual way. The bulkheads were fitted to the side, the stringed plates ran fore and aft, and the bulkheads were fitted in the usual way with angle-irons. The sluices were of brass, and 4 inches in the clear. The first bulkhead was 22 feet from the stem, the rest just before the mainmast, 108 feet from the first. The engine-room bulkhead was 56 feet from the other, and the rest 63 ft. 6 in. to the after bulkhead. The coal reserve bulkhead was not a water-tight one. The after bulkhead of the engine-room had a sliding door to the tunnel of the shaft, and when down was perfectly water tight.

By Mr. *Traill*.—I paid two visits to the ship in December last, one on the 4th, the other on the 22nd. I cannot tell either the heavy or light draught of the ship. I don't know that the boats had any patent lowering apparatus. Assuming that the ship drew 20 ft. 9 in. aft, the boats as swung on the davits would be about 20 feet from the water-line to the boat's gunwale. She had a topgallant forecabin, under which the crew were berthed. She had no shelter for passengers on deck. I allow 15 feet (cubic) for each passenger in the boats. She was allowed to carry 400 passengers.

By Mr. *O'Dowd*.—It was not obligatory on the Messrs. Wigram to build the "London" with water-tight compartments.

By Captain *Baker*.—I considered her sternports to be quite strong enough for a ship of her class. Her rigging was all wire, with rope lanyards.

G. J. Gladstone.

The within Deposition of the said George Joseph Gladstone was taken upon Oath, before me, at the Police Court, Greenwich, within the Metropolitan Police District, this 29th day of January 1866.

James Traill, Stipendiary Magistrate.

ROBERT TAPLIN, upon his Oath, saith:

I AM Engineer Surveyor to the Board of Trade, and have been 10 years in that office. It is a part of my duty to examine the engines and machinery of passenger steamers, also the safety valves, and fire-holes. I usually make those examinations twice a year upon each ship, provided they are within the Port of London. Those examinations are made in order that the necessary declarations can be made to procure the Board of Trade Certificate for the period of six months, mentioned in the Act of Parliament

Parliament. I have surveyed the engines and machinery of the "London" three times: first in October 1864, when she was new; I next surveyed her in May 1865, and lastly, December 1865, I think the 22nd of December; upon those surveys my attention was directed to the engines, boilers, and machinery. The power of the engines was 200 horse, nominal. The boilers were loaded 29 lbs. to the square inch. The screw shaft passed through the after engine-room bulkhead, with a leather washer round it. There was a sliding door by the side of it. It should have been water tight. It was properly fitted, and, according to my opinion, was water tight. The plates round the suction pipes were very good and sound. The fireplaces were about 2 ft. 6 in. from the stoke-hole platform, and 4 or 5 feet from the skin of the ship. I did not see the screw of the "London," my colleague saw that. I granted the owners of the "London" the usual declaration of its efficiency.

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By Captain *Harris*.—The engines were high and low pressure, direct acting. She had four copper pipes with gun-metal valves and expansion joints; the discharge pipes were flanged on. I should say the diameter of the flange was 20 inches, and the pipes about 1 foot in diameter. The working of the engines in this ship would not have been impeded, had there been a flat covering to the main hatchway of the engine-room under the skylights; it would have impeded the draught, which might have been artificially provided for. The bunkers were on either wing of the engine-room; she carried 370 tons of coals; rather she was constructed to carry that quantity; there was also a bunker before the forward bulkhead; there were no coals at the back of the boilers.

Robert Taphin.

The within Deposition of the said Robert Taphin was taken upon oath before me, at the Greenwich Police Court, within the Metropolitan Police District, this 29th day of January 1866.

James Traill, Stipendiary Magistrate.

GEORGE BARBER, upon his Oath, saith:

I AM a Shipwright's Surveyor to the Board of Trade for the Port of London, and have been 10 years in that capacity. I was at Glasgow for five years and a-half; I never saw the ship "London"; I have heard the description given of her engine-room hatchway by the witness Mr. Gladstone; I have seen a section and drawing of the hatchway. I have considered different plans that have come under my observation with reference to the protection of hatchways. In vessels with a full poop that originally had the engine-room skylight on the upper deck before the poop; the poop-deck has now been prolonged to a few feet before the engine hatchway, and a water-tight bulkhead has been carried up, from the main or upper deck to the poop-deck. I think that a very efficient mode, or to have shutters for the protection of the engine-room hatchways, as in use in the Navy; those shutters are in use in all ships in the Navy. There have been several ships fitted in the Clyde—foreign-going passenger steamers fitted as I have stated. From what I have heard, I believe that the ship "London" was fitted as steamers usually are out of this port. My experience is confined to ships built in the Clyde. I have not suggested that plan to any builders in London.

George Barber.

The within Deposition of the said George Barber was taken upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 29th day of January 1866.

James Traill, Stipendiary Magistrate.

Greenwich Police Court, 30th January 1866.

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THOMAS WILLIAM WAWN, upon his Oath, saith:

I AM Surveyor to Lloyd's Register of British and Foreign Shipping Association. That association was established for the purpose of furnishing records to underwriters, merchants, and shipowners of the qualities of British and foreign shipping. I have been acting as surveyor to this association 12 years. My duties, as such surveyor, are to look after the building and repairing of vessels, and to see that they are built according to the rule. I inspected the ship "London" while she was building, and with reference to the rules, examined her structure and materials. The materials used in the construction of that ship were of the best description, and the workmanship was of equal quality with the other. I examined the iron used in her plates, and its quality was of the best kind; the plates and angle iron all worked remarkably well, which was the best test of their quality. I produce the original sketch of the half midships section, which I worked by during the

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time of building. The garboard streaks were 14-16ths of an inch thick; from thence to the upper part of bilge, the plating was 13-16ths of an inch; from thence upwards to half the height between the orlop and main deck, 12-16ths of an inch; from thence to the lower edge of sheer streak plate 11-16ths of an inch; the sheer streak plate being 13-16ths; the plank sheer plate 8-16ths of an inch; that in wooden ships would be called the covering board; it prevents the water going down between the inner and outer skins; she had a deep spirketting plate; the timbers of this ship's frame were run up rather higher than they usually are, and the deep spirketting plates worked inside of them, forming a box girder 20 inches deep by 12-16ths of an inch thick, connected to the plank sheer plate by angle-irons 3 inches by 3 inches and 6-16ths in thickness, and rivetted through them to it; it was also connected to the upper deck stringer plate by an angle-iron 5 inches by 6, and 9-16ths of an inch thick. The stringer plate on the upper deck beams was 26 inches wide by 8-16ths of an inch. The angle-irons of the frame were 5½ by 3½ inches and 10-16ths of an inch thick; the reverse angle irons on the frame were 4 inches by 3½ and 9-16ths of an inch thick. The main kelson, or centre through-plate kelson, with flat plate on the top, was 34 inches deep by 11-16ths of an inch thick; the flat kelson plate was 27 inches wide by 14-16ths thick. The angle irons of the intercostal kelson were 5½ by 6 inches and 9-16ths thick. The intercostal kelson plate was 22 inches deep and 11-16ths thick. The bilge kelson angle-irons were 6 inches by 5½ and 9-16ths thick. The upper deck beams were of bulb iron, 9 inches by 9-16ths, with double angle-irons on the top, 3½ inches by 3½, one attached to every second frame. The main deck beams were of the same size with one beam under every upper deck beam. The orlop beams were 14 in number, of bulb iron, 9 inches by 9-16ths, with double angle-irons on upper edge 4 inches by 3½ and 9-16ths thick; the fore and aft tie-plates outside the hatches were 13 inches by 11-16ths; the lower deck stringer plate on ends of beams was 29 inches by 11-16ths, and the angle-iron connecting the same with the frame was 5½ inches by 6 and 9-16ths thick; the orlop deck angle-iron being, with the stringer plate, of the same size. The diagonal tie-plates on beams were 13½ inches by 11-16ths. The upper deck was of yellow pine, 4 inches thick, and fastened to the beams with through screw-bolts and nuts. The "London" had five water-tight bulkheads, two of them with sliding doors; one between the engine-room and the coal reserve, and the other at the forepart of the screw tunnel, which would be in the after bulkhead of the engine-room; the thickness of the bulkhead being 8-16ths, with angle-iron 4½ inches by 3½ and 9-16ths thick, 30 inches apart, and secured to the sides of the ship by double frames and vertical liners. The angle-irons and plating of the frame is known in the trade as "Weardale best best." At Lloyd's we do not recognise anything but the best iron, and the "Weardale best best" is the best of its kind. All the kelsons except the intercostal ran through the whole ship. The main kelson and bilge kelson ran fore and aft, from stem to stern; also all the stringers. The intercostal kelson was carried as far forward and aft as practicable. Her bowsprit and lower masts were of iron, double riveted at the butts and edges. All the masts went down to the kelson, except the mizenmast, which was stepped on the orlop deck beams. The topmasts were of wood, with the yards, except the lower and topsail yards, which were of steel. The standing rigging was of wire, and the running rigging of hemp of the best quality. When surveyed first, the "London" had two fore-sails, two foretopsails, two mainsails, two maintopsails, and a single suit of other sails. She had two life-boats, two long boats, and three other boats. Also a patent windlass and a capstan and steam winch, which were fitted to work the pumps. She had two iron pumps on deck and her engine pumps. The rest of her outfit was in strict conformity with Lloyd's rules.

Captain *Harris*.—Was she built better than is required by Lloyd's rules?

There was one thing that she would have been passed without. The butt straps of her outer plates were carried on to the edges of the plates above and below; the effect of that was to make her stronger. Those straps were not required by our rules, and she would have been passed by me without those straps. I reported the result of my survey to Lloyd's. I produce a certified copy of that report, and she was classed in accordance to it, "A. a. 1." That report contains the following passage: "She is in all respects a good vessel, and, in my opinion, eligible to be classed according to the recommendation below." The recommendation was that she should be classed "A. a. 1." Being so classed, she would retain that classification; subject to being surveyed periodically, and found fit to carry dry and perishable cargoes to any part of the world. I subsequently surveyed her again last December; she was in dry dock. I saw her two or three times about that time, and found her in every way in as good condition as she was in the beginning. I heard the evidence given by Mr. Gladstone yesterday, and I quite concur with him as to her seaworthiness and condition. I also heard the evidence of Mr. Barber with reference to the protection of the engines and the fires from heavy seas. I have considered the question as to how the engine-room hatchway might be protected from the breaking-in of a heavy sea. I agree with Mr. Barber, that his plan is right in spar-decked vessels, and could be very easily carried out; but in vessels with poops and fore-castles there is a great objection to it, unless the engines are right aft, then the plan can be adopted. I never saw a vessel better fitted than the "London," except those intended to have additional protection by being expected to be overladen or to be blockade runners, and to have water continually on deck.

By Mr. *Traill*.—The only thing I could suggest for furnishing additional protection to hatches

hatches, would be that the combings should be of iron. It appears to me that in this case the combings must have met with an accident; a loose spar on deck might have smashed them up. I would have a wooden cover for the hatchway, to be dropped over altogether on to the deck and used in bad weather as occasion required; such a course would prevent ventilation, which must be got from somewhere else. I should, however, have thought that, in the present case, that gratings, with a tarpauling over them, would have been sufficient.

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By Captain *Harris*.—If I were going to sea myself I should not require a better protection than that which the hatches of the "London" had. The two Clyde ships mentioned by Mr. Barber yesterday have, I think, spar decks. With regard to Mr. Barber's plan for protecting the engine hatchway, I do not think it has been adopted as a protection to the engine room, but rather to prevent the heat and steam from reaching the passengers on deck. On looking at this plan (a plan of the ship), if that line is the one to which the "London" was loaded, I do not see why she might not have gone down a foot deeper. Assuming she was loaded to 20 ft. 9 in., she would have been seaworthy.

By Mr. *Traill*.—If I had been sent by Lloyd's to have surveyed this ship on her winter passage to Australia, I should have certified her if she had been drawing 21 ft. 3 in. amidships.

Thomas Wm. Wawn.

The Deposition of the said Thomas William Wawn was taken upon Oath, before me, at the Police Court, Greenwich, within the Metropolitan Police District, this 30th day of January 1866.

James Traill, Stipendiary Magistrate.

SAMUEL SMITH, upon his Oath, saith:

I RESIDE at Blackwall, and am shipwright foreman in the employment of Messrs. Wigram, and have been so employed 11 years; I have been employed 20 years since I was out of my time; I was a shipwright in Messrs. Wigrams' before I was foreman three or four years ago. I have superintended the building, docking, and repairing several iron ships. When about to build the "London," I received directions from Messrs. Wigram not to permit any bad workmanship whatever in her construction, and anything that I could suggest to increase her strength, the expense would be of no consideration. The ship was built in accordance with Lloyd's rules in every respect, and was inspected by Lloyd's surveyor while building; he never found any fault with her whatever; on the contrary, he expressed his opinion that she was of greater strength than his rules required. I examined the ship last December, previous to her last voyage, and could not find any leakage or tendency to weakness throughout the vessel. During the construction the plates worked well; I believe they were of the very best iron.

By Captain *Harris*.] She drew 15 ft. 3 in. when docked in December.

Samuel Smith.

The within Deposition of the said Samuel Smith was taken upon oath before me, at the Greenwich Police Court, within the Metropolitan Police District, this 30th day of January 1866.

James Traill, Stipendiary Magistrate.

THOMAS HARDING, upon his Oath, saith:

I LIVE at 13, Walton-road, Deptford, and foreman to Messrs. Humphreys & Tennant, of Deptford, engineers, who made the engines for the "London." I had charge of the ship while on the slip in fitting the under-water work, the boring out of the ship's stern for the shaft, and fitting all valves and cocks to the ship's bottom. The foreman, Maxwell, superintended the fitting of the engines in the ship. I took charge of the engines after Maxwell had finished them, and went out in charge of them on the first voyage of the "London" as chief engineer. I have a first-class certificate of service as chief engineer. I never saw a pair of engines work better than they did in my life. We started in 1864 and returned in 1865, to Australia and back, and I had only to stop the engines out and home for 15 minutes during that time for adjustment. In December last, previous to her last voyage, I inspected her engines and found them in perfect condition. After her second voyage home the engines were fit to go to sea again at that moment. I went on board the "London" on her last voyage as far as Plymouth; I was sent by Mr. Humphreys to see how the engines were working, to see if anything could be improved upon; they worked very well indeed; engines could not work better. There were four bilge pumps; that is to say, four pumps working from the bilge, two capable of lifting 250 gallons a minute,

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30 January 1866. between them; another capable of lifting 100 gallons a minute, and the fourth pump capable of raising 4,000 gallons per minute; making together 4,350 gallons per minute.

By Mr. *Traill*.] I had business at Plymouth, and that induced me to go in the "London" as far as that on the last voyage, and not on account of any suspicion or complaint about the engines.

T. Harding.

The within Deposition of the said Thomas Harding was taken upon oath before me, at the Greenwich Police Court, within the Metropolitan Police District, this 30th day of January 1866.

James Traill, Stipendiary Magistrate.

ISAAC COLE, Sworn:

I LIVE at East India-road, Poplar; I am a ship's rigger; I rigged the steam ship "London." The lower rigging and stays were of galvanised iron rope; also the topmast and topgallant mast and stays and rigging were of galvanised wire rope, parcelled and served throughout. The bobstays and bowsprit shrouds were of chain; the jib-boom guys of wire, and martingale stay and back ropes were galvanised wire rope. The lower and topsails lifts were of hemp. The yards were of iron, both lower and topsail; the topgallant and royal yards of wood. The running rigging was of the best hempen rope. All the rigging was of the best quality.

Isaac Cole.

The within Deposition of the said Isaac Cole was taken upon oath before me, at the Greenwich Police Court, within the Metropolitan Police District, this 30th day of January 1866.

James Traill, Stipendiary Magistrate.

THOMAS NORTH, upon his Oath, saith:

I RESIDE at Brummel House, Bromley, Middlesex, East. I am foreman mast-maker and boatbuilder in the service of Messrs. Wigram. The masts of the "London" were made under my superintendence, and by me. I now produce the mast dimensions book, which is in my handwriting, part of it: the three lower masts and bowsprit were of iron; the three lower yards, fore and main topsail yards, were of iron; all the rest of the spars were of wood; the mizen topsail yards were of wood; the lower mast was made in four plates, with four internal angle irons, all of the best Lowmoor plate; the yards were made in two plates, with three internal angle irons. The length of the foremast was 96 ft. 8 in., and diameter 33 inches. The length of the mainmast was 100 ft. 9 in., and diameter 33 inches. The foremast, from the deck to the hounds, was 53 feet; and the length of the topmast 58 feet, diameter 20 inches. The masts were of the best Lowmoor plates; they were double rivetted; the butt straps were treble rivetted.

By Captain *Harris*.—They were of the same height as wooden masts would have been for that ship, and of the same diameter, and about the same height. I consider that built wooden masts would be heavier than iron masts. She was not masted out of proportion at all. Three times the breadth of the vessel is the general calculation for the length of the mainmast, and the "London" was under that. A topsail yard made of steel or iron would be lighter than an ordinary topsail yard. The topsail ties were of chain.

Thos. North.

The within Deposition of the said Thomas North was taken upon oath before me, at the Greenwich Police Court, within the Metropolitan Police District, this 30th day of January 1866.

James Traill, Stipendiary Magistrate.

JAMES SEDGWICK LEAN, of the Government Emigration Office, Sworn:

I AM one of the emigration officers for the port of London, acting under the Emigration Commissionera. It is part of my duty to see that the requirements of the Passengers Act are enforced or complied with in all passenger ships going to sea, that come under the Act. It is my duty to look to the seaworthiness of the ship; they are surveyed by two surveyors, by my directions; I look to the size of berths, hospital arrangements, light, and ventilation. In all these respects, as regards the Passengers Act, I conceived the "London" to be perfect in every way. The regulations of the Act, as regards the number and construction of her boats, were complied with; she was bound to carry six boats, she had seven. The Passengers Act does not prescribe the size or cubical contents:

tents; "suitable boats" are mentioned in the Act; one longboat and properly fitted lifeboat are prescribed by the Act; she had those. She was fitted with davits to carry six boats; the seventh boat was carried on the fore part of the deck-house; they were of a suitable character, both as to size and construction; they were very fine boats. She had compasses, chronometers, and signal-guns; she had a fine engine, in working order, 1 portable and conducting hose from the engine, 4 compasses and a standing compass, an azimuth, 5 chronometers, 3 barometers, 36 rockets, 36 blue lights, 1 gun and 50 rounds of ammunition, signal lanterns, a fog horn, 1 bell, booby hatch, and tarpaulings for each hatchway. She had an excellent crew; I mustered them at Gravesend, just before the last voyage; there were a dozen or 15 foreigners amongst the crew. I had no hesitation at all in giving the necessary certificate to enable the captain to get his clearance. She was surveyed by the surveyors, under my directions, in dry dock; and I myself surveyed her at Gravesend, as to her equipment, before she sailed. I do not consider it necessary that a ship should have boats sufficient to carry all the passengers from a ship. I should not grant my certificate unless I was satisfied she was seaworthy.

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By Mr. *Traill*.—I considered her at Gravesend to be in good trim and seaworthy condition. I did not consider her too deep; I considered that she had 8 feet freeboard amidship the lowest part, when at Gravesend. I gave her a certificate as to her seaworthiness and all the requirements of the Passengers Act. I now produce a copy of that certificate. With reference to engine hatchways, it is desirable to have proper means to batten down the hatches. I have not had much experience in steam-ships. The skylight of the "London" was fitted with glass 2 inches thick. This was the first steam-ship that I cleared going from London to Australia. It did not occur to me that there was any defect in the hatchway of the "London"; it was very strong; but since this discussion, I think that all ships should have the means of battening down the hatches. I surveyed the "London" at Gravesend on the 30th December; she had some coals, I understood 50 tons in bags on the upper deck; the bags were stowed in such a way as not to require any other security; I saw no other stores on deck; that quantity of coals would be consumed in three days, and she was going to call at Plymouth; the bags were stowed to my satisfaction. There was nothing else on deck in the shape of stores. She left Gravesend the same day.

"Half-an-inch."
Vide Evidence corrected, p. 11.

By Captain *Harris*.—It is part of my duty to see that the ship is provided with proper sails. I was supplied with a list of the sails; I can't say that I examined them.

Jas. S. Lean.

The within Deposition of the said James Sedgewick Lean was taken upon oath before me, at the Greenwich Police Court, within the Metropolitan Police District, this 30th day of January 1866.

James Traill, Stipendiary Magistrate.

ROBERT MAXWELL, upon his Oath, saith:

I AM out-door foreman in the employ of Messrs. Humphreys and Tennant. I have been employed by them nine years, six years as foreman. I superintended the fixing of the engines on board the ship "London," partly at Deptford Pier, and the remainder at the East India Dock. I am not prepared to say that she was so far fitted at Deptford as to be able to get up steam. Everything was in complete order before I left her. I went as far as Greenhithe with her on her first voyage. On the 23d of last December I was on board the "London" in the East India Docks; the engines were then in perfect order; I was sent for the purpose of examining them.

By Captain *Harris*.—There were four discharge pipes, two each side of ship. The valve-box is fixed rigid on the ship's side; the copper pipe from the engines to the valve-box is fitted with an expansive joint, which is water-tight. In my opinion, as an engineer, I don't think that anything could have happened to these pipes. The bilge injection acted by the centrifugal pump. The bilge injection had no connection at all with the sea discharges. This apparatus would clear the ship of water much quicker than an ordinary bilge injection.

By Captain *Baker*.—I should say that the engines would drive the ship eight knots or 8½ knots an hour, she drawing 20½ feet. The piston rod of the engine, I perceive by the plan of the "London" produced, would go just up to the top of the combings of the engine hatchway.

Robert Maxwell.

The within Deposition of the said Robert Maxwell was taken upon oath before me, at the Greenwich Police Court, within the Metropolitan Police District, this 30th day of January 1866.

James Traill, Stipendiary Magistrate.

31 January 1866.

Greenwich Police Court, 31 January 1866.

WILLIAM BUNDOCK, upon his Oath, saith :

I LIVE at No. 6, Mary-place, Bow-lane, Poplar, Middlesex. I am sailmaker and ship's husband to the Messrs. Wigram. I made the sails for the steam-ship "London." I produce the Sail Report Book, the entries in which are in my handwriting; that book contains a list of the sails supplied to the ship; it is dated 28th November 1865. The list that I produce is a correct list; the original in the book was signed by Captain Martin. The list is as follows :—

28 November 1865.—Steamship "London."

LIST of SAILS (Second Voyage).

Names of Sails.	State.	Remarks.
One flying jib - - - -	One-third -	High rope; one new - - - - 1
One outer jib - - - -	One-half -	Overhaul for bending.
Two - ditto - - - -	Two-thirds -	As it is.
One inner jib - - - -	Three-eighths -	Overhaul screws.
Two - ditto - - - -	Two-thirds -	Repairs.
One foretop staysail - - - -	One-sixth -	As it is.
Two - ditto - - - -	Five-eighths -	Thoroughly repair for bending.
One fore course - - - -	Three-eighths -	Overhaul for bending.
Two - ditto - - - -	Two-thirds -	Slight repairs.
One main course - - - -	One-fourth -	Slight overhaul.
One lower topsail - - - -	One-sixth -	As it is.
Two - ditto - - - -	One-half -	Slightly repair for bending.
Three - ditto - - - -	Five-eighths -	- - - ditto.
One upper topsail - - - -	One-fourth -	As it is.
Two - ditto - - - -	One-half -	Overhaul for bending.
Three - ditto - - - -	Five-eighths -	Repair for bending.
One lower mizen topsail - - - -	One-fourth -	As it is.
Two - - ditto - - - -	One-half -	Overhaul for bending.
One upper mizen topsail - - - -	One eighth -	As it is.
Two - - ditto - - - -	One-half -	Overhaul for bending.
One topgallant sail - - - -	One-third -	Slight overhaul for bending.
Two - ditto - - - -	Two-thirds -	Repair for bending.
Three - ditto - - - -	Three-fourths -	As it is; one new - - - - 1
One mizen topgallant sail - - - -	New - - - -	As it is.
Two - - ditto - - - -	One-half -	Repair for bending.
One royal - - - -	One-fourth -	Slight overhaul for bending.
Two ditto - - - -	Two-thirds -	Repair for bending.
Three ditto - - - -	Three-fourths -	Ditto; one new - - - - 1
One mizen royal - - - -	Three-eighths -	As it is.
One maintop staysail - - - -	Two-thirds -	Repair for bending; one new - - - 1
One main topgallant staysail - - - -	Three-fourths -	As it is; one new - - - - 1
One main royal staysail - - - -	- ditto -	Repair for bending.
One mizen staysail - - - -	One-half -	- - ditto.
One mizen top staysail - - - -	One-fourth -	Thoroughly repair for bending.
One boom mizen - - - -	One-eighth -	Slight overhaul.
Two - ditto - - - -	One-half -	- - ditto - for bending.
One lower studding sail - - - -	One eighth -	} As they are.
Two - ditto - - - -	One-half -	
One top studding sail - - - -	One-eighth -	} ditto.
Two - ditto - - - -	- ditto -	
Three - ditto - - - -	One-half -	} ditto.
One topgallant studding sail - - - -	One-fourth -	
Two - - ditto - - - -	Three-eighths -	} ditto.
Three - - ditto - - - -	- ditto -	
One funnel awning - - - -	New.	
One fore part of quarter deck - - - -	Three-eighths -	New sail, made in sail loft.
One after - ditto - - - -	- ditto.	
One poop - ditto - - - -	- ditto -	1 flying jib - - - -
		1 topgallant sail - - - -
		1 royal - - - -
		1 maintop staysail - - - -
		1 main topgallant staysail

5

W. Bundock.

(signed) Captain Martin.

INQUIRY INTO THE LOSS OF THE STEAM SHIP "LONDON." 9

All these sails were shipped on board the "London" before she started on her third voyage. They were made of the best Irish flax. There were 200 tons of kentledge on board. 31 January 1866.

By Captain *Harris*.] The foretopmast staysail was made of canvas No. 1. It is not the practice to send storm-sails, except those mentioned in the list, out in any of Messrs. Wigram's ships. Captain Martin was on the survey of those sails, and he did not require storm-sails, or more than there was; if he had, no doubt they would have been supplied.

W. Bundock.

The within deposition of the said William Bundock was taken upon oath, before me, at the Greenwich Police Court, within the Metropolitan District, this 31st day of January 1866.

James Traill, Stipendiary Magistrate.

PETER JOHN REEVES, upon his Oath, saith:

My office in town is 110, Fenchurch-street, City. I am General Surveyor of Shipping under the Emigration Commissioners. I also survey ships on my own private account. I have been a surveyor of ships 25 years. I saw the ship "London" in dry dock; on 28th November last I surveyed her; she was a fine ship. I made this memorandum at the time; it is as follows: "Captain Reeves and Mr. Cornish surveyed this steam ship ("London," 1,429 tons), lying in the dock belonging to the Messrs. Wigram & Sons, Blackwall; she was built by them last year, A. 10 years; she is a very strong-built ship, and well fastened in every respect. Examined her throughout; found all in first-rate order; she is scraped and painted; part of upper and waterways caulked. Her anchors, chains, boats, &c., the same as before, as per certificate." I went through the ship inside and out, and did not find the slightest movement in her bolts or rivets; the only thing wanting was her waterways caulked; that was done. The report now produced, signed by myself and Mr. Cornish, is the official report I made to Captain Lean, the emigration officer.

P. J. Reeves.

I also produce an account of anchors, cables, warps, and boats of the ship "London":

1 Anchor	-	-	-	-	-	-	-	47½ cwt.
1 Ditto	-	-	-	-	-	-	-	47½ "
1 Ditto	-	-	-	-	-	-	-	47½ "
1 Ditto, stream	-	-	-	-	-	-	-	14½ "
1 Ditto, kedge	-	-	-	-	-	-	-	7½ "
1 Ditto ditto	-	-	-	-	-	-	-	3½ "
300 Fathoms	-	-	-	-	-	-	1½ ins.	chain cable.
90 "	-	-	-	-	-	-	1½ "	stream ditto.
90 "	-	-	-	-	-	-	10½ "	hawser.
90 "	-	-	-	-	-	-	7 "	ditto.

B O A T S.						Length.	Breadth.	Depth.
						<i>Ft. in.</i>	<i>Ft. in.</i>	<i>Ft. in.</i>
Two long-boats	-	-	-	-	each	26 -	8 0	3 6
One cutter	-	-	-	-	-	26 -	7 -	2 8
Ditto	-	-	-	-	-	26 -	6 -	2 6
Two life-boats	-	-	-	-	-	26 -	7 -	2 8
One jolly-boat	-	-	-	-	-	24 -	5 6	2 6

The within deposition of the said Peter John Reeves was taken upon oath, before me, at the Greenwich Police Court aforesaid, this 31st day of January 1866.

James Traill, Stipendiary Magistrate.

31 January 1866.

SAMUEL TOM CORNISH, sworn:

Of Bow, Middlesex. I am employed by the Emigration Commissioners to survey passenger ships. I have been so employed 18 years. I surveyed the ship "London" previous to her last voyage, in conjunction with the last witness. I concur in his opinion. I signed the official report now produced.

Samuel Tom Cornish.

The within deposition of the said Samuel Tom Cornish was taken upon oath before me, at the Greenwich Police Court, within the Metropolitan Police District, this 31st day of January 1866.

James Traill, Stipendiary Magistrate.

ALEXANDER GUNN, upon his Oath, saith:

I RESIDE in Alfred-square, Walworth. I am clerk in the Record Department of the Registrar General of Seamen, Adelaide-place, London Bridge. I produce the official copy of the articles of agreement of the ship "London," between the master and the crew. Those articles contain the names and places of birth of the crew. I have an analysis of the articles, signed 23rd December 1865, as follows:—

Master	-	-	-	-	-	1	A. Seamen	-	-	-	-	-	34
Mates	-	-	-	-	-	3	Winchdriver	-	-	-	-	-	1
Surgeon	-	-	-	-	-	1	O. Seamen	-	-	-	-	-	4
Carpenter	-	-	-	-	-	1	Boys	-	-	-	-	-	2
Sailmaker	-	-	-	-	-	1	Firemen	-	-	-	-	-	8
Stewards, cooks, and servants	-	-	-	-	-	14	Trimmers	-	-	-	-	-	3
Stewardess	-	-	-	-	-	1	Midshipmen	-	-	-	-	-	2
Baker	-	-	-	-	-	1							
Butcher	-	-	-	-	-	1							83
Engineers	-	-	-	-	-	3							
Boatswains	-	-	-	-	-	2							

Amongst the able seamen were 15 foreigners, as follows:—Swedes, 5; Norwegians, 2; Danes, 2; Hamburgers, 2; Prussian, 1; German, 1; Hanoverian, 1; and Holland, 1. All the foreigners are entered as able seamen. It does not appear by the record that any of the foreign sailors had sailed before in the "London," but it appears that 12 had previously sailed and served on board British ships.

Alex. Gunn.

The within deposition of the said Alexander Gunn was taken upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 31st day of January 1866.

James Traill, Stipendiary Magistrate.

JOHN THOMAS FORSTER, of the Emigration Office, London.

I AM a Staff Commander in Her Majesty's Navy. I inspected the "London" while in the East India Docks; while she was taking in her dead weight, previous to her last voyage; I cannot say the day. I afterwards saw her once in the docks to examine her provisions. Captain Lean asked me on the first inspection to go into the hold and see to the stowage of the dead weight, which consisted of railway iron. I learned from the chief officer of the ship that the quantity intended to be taken on board was about 350 tons, and on that basis I examined the main hold, and the way they were stowing the iron was the correct and proper way. There were then about 150 tons in the hold; the lumpers were then at work, passing other iron into it. I did not go into the hold on my second inspection to examine the provisions; the hold was full upon my second inspection; she subsequently got her clearing certificate upon my report, so far as the dead weight and provisions were concerned.

By Captain Harris.—The railway iron was stowed as ballast, not grating way, but lengthways, and not raised. The mode of stowing it was a proper mode for that quantity, and for that class of ship.

Geo. T. Forster.

The within deposition of the said John Thomas Forster was taken upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 31st day of January 1866.

James Traill, Stipendiary Magistrate.

Captain JAMES SEDGWICK LEAN, recalled; and examined:

31 January 1866.

It appears that I stated in my evidence yesterday that the thickness of the glass in the engine-room hatch skylight was two inches, whereas it should have been half an inch.

Jas. S. Lean.

By Mr. Traill.—I mustered the crew of the ship "London" at Gravesend by the articles, and those that were described as able seamen therein I inspected and passed as such.

Jas. S. Lean.

The within deposition of the said James S. Lean was taken upon oath, before me, at the Greenwich Police Court aforesaid, this 31st day of January 1866.

James Traill, Stipendiary Magistrate.

EDWARD HUMPHREYS, upon his Oath, saith:

I AM an engineer, and one of the firm of Humphreys & Tennant, of Deptford. The engines of the ship "London" were built at our establishment, and under my own immediate superintendence and from my own design. The owners instructed me to build them in the best possible manner, of the best possible materials, and they paid me the very best price for the work. When it is required to draw water from the bilge and discharge overboard, it would not be necessary to drive the centrifugal pump at a greater number of revolutions. The diameter of the revolving disc of the pump which gives motion to the water is 3 feet. It is driven by an independent auxiliary engine. For the ordinary purposes of condensation 70 to 80 revolutions would be sufficient; but, if necessary, in a hot climate, it could be driven at 200. The centrifugal pump-bilge was furnished with a non-return valve. The auxiliary engine is from 16 to 20-horse power, and no stress of weather was likely to affect the action of the valves or discharge pipes. At the usual speed of 70 to 80 revolutions the quantity of water per minute that could be discharged from the ship would be upwards of 4,000 gallons. I am at present fitting two of Her Majesty's transports with bilge suction of the same character. I have also fitted some eight or ten ships upon the same principle, some of which were for the Peninsular and Oriental Company. The pump is capable of throwing full 4,000 gallons per minute; but as to the exact number of revolutions, I am not prepared to state at which it would take to discharge that quantity of water.

Edw. Humphreys.

The within deposition of the said Edward Humphreys was taken, upon oath, at the Greenwich Police Court, within the Metropolitan Police District, this 31st day of January 1866.

James Traill, Stipendiary Magistrate.

The said ROBERT MAXWELL, recalled; and, upon his Oath, further says:

I DID not detect anything the matter with the non-return valve of the centrifugal pump-bilge when I last inspected her; had there been anything wrong with that valve, I think I should have discovered it. I have no doubt that it was all right.

Robert Maxwell.

The within deposition of the said Robert Maxwell was taken upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 31st day of January 1866.

James Traill, Stipendiary Magistrate.

The said JOHN THOMAS FORSTER, recalled; and, upon his Oath, further saith:

I HAVE heard the evidence given in this case, with reference to the protection of ships' hatchways; I have considered the subject with reference to protecting them from heavy seas. I consider that the engine hatchway of steamers should be capable of being protected, so as to be as strong as the deck by some arrangement or other. It would be similar

31 January 1866. similar to what you have at present, only it requires to be stronger; the present skylights might be made as strong as the deck.

Jno. T. Forster.

The within deposition of the said John Thomas Forster was taken upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 31st day of January 1866.

James Traill, Stipendiary Magistrate.

1 February 1866.

Greenwich Police Court, 1 February 1866.

JOHN LUKE RICHARD STOLL, upon his Oath, saith:

I AM a Captain in Her Majesty's Navy, and Emigration Officer at Plymouth, acting under the Emigration Commissioners and the Passengers Act. I have held that office 12 years, eight years at Plymouth. I went on board the ship "London," in the discharge of my duty, at a little before noon of the 5th of January of this year. I was accompanied by the captain and the surgeon of the ship. I made an inspection of the ship according to the Passengers Act—the usual inspection. I did not observe that she had received any injury on her voyage from London to Plymouth, not the slightest. The inspection I made was going round the decks, examining boats, seeing that they had the life-buoys, and all that sort of thing, in their places. I took a general view of her rigging and spars, and then I looked round into the engine-room, and sent for the chief engineer to speak to him: he reported to me that his department was in perfect order; I had a general conversation with him as to how her engines had behaved coming down to Plymouth, and how she had steamed, as I knew that they had had very rough weather. He told me the rate she had steamed; I forget what it was; it was very good, and surprised me, I knowing that her maximum rate of speed was not more than nine knots; and that convinced me that the vessel must be in good trim. I made as complete a survey as the circumstances required. She called at Plymouth to take in passengers, and coal in place of that which she had expended on her voyage. Fifty tons of coals is said was taken on board; it was in bags, and placed round the engine-room hatch, and steam chest on the upper or main deck. There were no coals placed in the after combing of the engine-room hatch; there was a considerable gangway round the coals. No cargo was shipped at Plymouth; and only articles for present use of the passengers that were shipped there. Although Plymouth was a mere port of call, it was my duty to examine the ship as to her state; and I gave the certificate now produced. I did not notice her draught of water, critically; I took her to be in good trim, not too deep; of course every steam vessel is a little deep on leaving port, otherwise her fan would very soon be out of water.

I have a memorandum of the readings of the barometers of the 5th, 6th, and 7th of January, on board the Queen's harbour-master's vessel, in the Sound. On the 5th of January, at 8.0 a.m., it was 29.90; at noon, 30.04; 4.0 p.m., 30.07. On the 6th of January, at 8.0 a.m., 30.17; noon, 30.25; sunset, 30.18. On the 7th of January, at 8.0 a.m., 29.76; noon, 29.78; sunset, 29.78. The "London" left Plymouth at midnight of the 5th, and the weather was then fine and calm; and the weather continued the same all the following day. The barometer generally since her loss has been flying about. I considered the weather was very favourable on the 5th for any vessel to go to sea, and all the following day. The coals that were stowed on deck did not interfere with the navigation of the ship, or the comfort of her passengers. The coals were stowed in bags lengthways, four deep and four wide. I know, of my own knowledge, that on her former voyage she carried her coals in the same manner. This was the third time that the "London" had passed through my inspection; the latest time that I saw her on the 5th of January was half-past one in the afternoon; she then had her top-gallant yards across. It is part of my duty to muster the crew, if necessary. I inquired whether the crew was the same that they had started with from Gravesend; the captain assured me that they were the same, and that he was going to ship three extra hands; I looked over the articles. I did not understand that any of the crew had left the ship at Plymouth; I am sure that none of the crew left the ship there. It is not compulsory upon me to muster the crew, unless I suspect fraud. The captain actually shipped four extra hands (A. B.'s) at Plymouth; five were entered, but one got drunk, and did not join.

By Captain *Harris*.] It is usual, in winter months, for merchant ships to go to sea with their royal-masts on end, and top-gallant yards across, but not men-of-war, in bad weather. I am astonished that it is the custom for merchant ships to do so; I do not think it a prudent course, though it is a universal one. The very last Government emigration ship that entered in the Sound since the loss of the "London" went out with all her top gear, and I could not prevail upon the captain to send his top-gallant yards on deck, the weather

looking very threatening. I think it would be more prudent and "snug" if, in the winter months, merchant ships went to sea with stump top-gallant masts instead of the long masts. 1 February 1866.

John L. R. Stoll.

The within deposition of the said John Luke Richard Stoll was taken, upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 1st day of February 1866.

James Traill, Stipendiary Magistrate.

ISAAC COLE, upon his Oath, saith :

I AM a Stevedore. I superintended the loading of the ship "London," in the East India Docks, previous to her last voyage, under the superintendence of Mr. Charles Wigram, one of her owners. We took the cargo in in six days. I can't tell the quantity of coals taken on board. The quantity of dead weight, consisting of bar and sheet iron, was 345 tons; I am to be paid upon that tonnage; it was stowed from the after part of the main hatchway to the after part of the fore hatchway, leaving a space in the sides of about 4 feet. I have been 23 years a stevedore, and, according to my judgment, that was the proper place to stow the iron; the bar iron was stowed what we call "grating fashion," crossways, and sheet and bundle iron was stowed in the same way on the top of the other; it occupied a space of about 56 feet in length, about 24 feet in breadth, and about 5 feet deep. It was stowed away under my own eye and by my assistance; that was principally the dead weight; there were some casks of agricultural implements. I take those by measurement. There were cases and bales of goods, 963 tons measurement. I can't tell whether that includes the casks of agricultural implements. On an average 35 tons weight to every 100 tons measurement, I should say, would be the cargo of the "London." I put the kentledge on board the "London" on her first voyage, 200 tons, iron; the same quantity remained in her the three voyages. The measurement goods were stowed over the iron in the main hold and part in the after hold; none of the cargo was stowed on deck. I stowed her stores and water on board—about 120 tons of provisions; the tanks were all filled with water, but I don't know the quantity. A great part of the passengers' baggage was stowed away while she was in the East India Dock; that which was not required on the voyage was stowed in the fore hold; that occupied about 50 tons space of room. I had superintended the stowage of her cargo on all three voyages. On her first voyage she carried dead weight 180½ tons iron, measurement, 773 tons. Second voyage, total weight and measurement 1,347 tons. The third and last voyage, 1,308 tons. She had about the same quantity of iron in the second voyage as the last.

By Captain *Harris*.—The kentledge was stowed as follows:—155 tons down in the main hold, from the after part of the main hatchway to within about 20 feet of the after part of the fore hatchway, and the rest in the after hold, from the fore part of the after hatchway to the tank room, about 15 or 20 feet; none in the midship body. The tanks were on either side of the screw alley, one up, close to the deck; above that there is a deck. The dead weight in the main hold was stowed on billet-wood over the kentledge, the thickness of the billet-wood being 9 to 10 inches; the bar iron was stowed grating fashion from the commencement, and chocked off in the wings with billet-wood. She was filled chock up to the beams with measurement goods; that was the case also in the after hold, but no iron was carried there as dead weight. The wet provisions were carried there also. Stores for the homeward voyage (dry stores) were carried in the fore hold. Fifteen tons of coals were taken on board for the ship's use, and stowed in the fore peak; that quantity of coals filled up the fore peak. The chain lockers are before the fore hatchways. It was part of my duty to take in her spars. She had a spare topmast, top-sail yard, jib-boom, flying jib-boom, and two or three spare top-gallant masts and stud-sail booms. The topmast and topsail yard were stowed on deck, and the other spars on the top of the house; those on deck secured to ring bolts upon chocks, and those on the house were lashed to ring bolts down to the deck on each side.

By Captain *Baker*.—She had top-gallant mast and royal mast in one spar fore and aft; the flying jib-boom was distinct from the jib-boom. The tanks went up to the orlop deck laid over the tunnel. In my opinion not any of the cargo or spars was likely to fetch weight or break adrift in bad weather.

By Mr. *O'Dowd*.—The second officer of the ship was down in the hold every day during the stowage of the cargo.

Isaac Cole.

The within deposition of the said Isaac Cole was taken, upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 1st day of February 1866.

James Traill, Stipendiary Magistrate.

1 February 1866.

HENRY CAULIER, upon his Oath, saith :

I AM the Principal of Searcher's Department, in the Long Room of the Custom House. Our department receive all the shipping bills for goods exported from the port of London. A shipping bill means the entry outwards of goods exported, showing the value, quantity, and description of goods, and is prepared by the exporter. In respect to British and foreign free goods, it has to be prepared in conformity to the published list. In case of bonded goods it is still prepared by the exporter, and must furnish the particulars of quality and description of goods, which is certified by the Comptroller of Accounts. Assuming they give a correct description of the goods, they would furnish a very minute account of the ship's cargo. We have the means of ascertaining that the goods mentioned in the ship's manifest are cleared by comparison with that document. These shipping bills supply the most accurate description of a ship's cargo; I have the shipping bills of the ship "London." I have made an analysis of those bills. The manifest was received on 4th January. The dead weight, such as iron plates, bars, sheet-iron, lead and shot, stone blocks, iron nails, and screws, are declared to weigh 347 tons 4 cwt. 3 qrs. and 18 lbs. There is other weight, such as hardware, agricultural implements, and similar description of goods, weighing 13 tons 19 cwt. 3 qrs. and 4 lbs. The remainder of the cargo was general. The total declared value of the cargo of the "London" was 124,785 l. 17 s. 4 d. That is irrespective of the bonded goods, which would probably be 100 l. or 200 l. more.

H. Caulier.

The within deposition of the said Henry Caulier was taken upon oath, before me, at the Greenwich Police Court, within the Metropolitan police district, this 1st day of February 1866.

James Traill, Stipendiary Magistrate.

The said ISAAC COLE, recalled; and, upon his Oath, further says:

AFTER everything had been put on board the "London," on her last voyage, I saw her draught of water while in dock; it was 20 feet forward, 20 feet 9 inches aft. I made a memorandum of it at the time in my day-book.

By Captain Harris.—There were three heights of kentledge in the ship, in the fore hold; and two heights in the after hold.

Isaac Cole.

The within deposition of the said Isaac Cole was taken upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 1st day of February 1866.

James Traill, Stipendiary Magistrate.

GEORGE JAMES THOMPSON, upon his Oath, saith :

I LIVE at 40, East India-road, Limehouse. I am a Trinity House Pilot (licensed branch pilot). I have been so upwards of 34 years. I was engaged to pilot the "London" on last voyage from London to the entrance of Plymouth Sound. I went on board early on the morning of the 28th December about eight o'clock. I took her to Gravesend, and made her fast to one of the mooring buoys, after we had taken in the live and dead stock and baggage; I took her draught of water myself; about 19 ft. 9 in. forward, and 20 ft. 9 in. abaft. I had piloted her on the two former voyages, the first voyage at Greenhithe; she drew 19 ft. forward, and 20 ft. abaft; and on the second voyage 18 ft. 3 in. forward and 21 ft. 9 in. abaft. She left Gravesend on the 30th of December last, and anchored in the Nore in the evening, and remained all the next day, because it blew a gale of wind south-west. On the 1st of January we got under weigh at daylight, and proceeded for the Downs, passed the South Foreland as they were lighting the lamps, about four o'clock in the afternoon. We had before that had fore and aft canvas set; round the South Foreland, the wind being ahead, we took them in, and went down under steam only; at 8 p.m. we passed Dungeness. At 2 a.m. of the 2d of January, we were abreast of Beachy Head; having got a good offing, we turned the yards round, kept Channel course, set fore and aft canvas, lower topsails and foremast. During the day the wind began to freshen very much, and not being able to weather St. Catherine's Point, we put her about. I then consulted Captain Martin, that it would be better for us to go to the Mother Bank, as the weather appeared so squally and unsettled; he went down and looked at his barometer, and said he thought it was the most prudent thing to do. We anchored at the Mother Bank about 3.30 p.m.; during the night it blew a heavy gale of wind from the south-west. At 10 a.m. on the 3d January, we got under weigh, and proceeded for the Needles, which we passed about 4 p.m. There was a heavy sea outside, but we made very good way, and at 8 p.m. we passed Portland. At 2 a.m. of the 4th January we sighted the Start Light, and about 7 we were abreast of it; the weather then became thick with rain, a strong wind from the S.S.W., and heavy confused swell-up. About 9.30 a.m. we distinguished the land, and steered for Penlee Point, and

and anchored at Plymouth Sound at noon of the 4th, being about 22 hours from the Needles. She behaved very well; she took some seas on the 4th; it was a tremendous sea on the 4th, very confused. She made about four knots, and when we got to Plymouth, she had but four or five bags of coals on deck. The coal did not shift at all going down; she made one or two heavy lurches. Her fore and main hatches had the tarpaulings on going down, not battened. I have had great experience in navigating vessels, and am of opinion that the "London" was not too deep. The chief officer, Mr. Harris, told me she had a foot to spare, being nearly nine feet clear from the water's edge.

By Captain *Harris*.—The rate of pilotage is reckoned by the foot; a flat-floored ship such as the "London" would lighten more than a sharp ship; and I consider that at Plymouth she would be eight inches lighter than when she left Gravesend. I should not call the "London" a wet ship.

By Captain *Baker*.—She steered very well; being a long ship, and considering the weather, she required care. I set the mizen staysail going down, and considered that to be a good storm-sail; we bent a fore staysail at Gravesend, one that was made for that particular stay, of very stout canvas, No. 1. She had no trysails. I think she could have carried the mizen staysail hove to in a gale of wind; it had no reef or bonnet. The driver was hauled out on the gaff, in the same manner that a trysail is set. I think they could have made a storm-sail of that, by hauling out the foot and keeping the head fast. In my opinion the "London" carried efficient canvas to lay to in any gale of wind; efficient in point of position as well as quality. I pilot the ships of the Peninsular and Oriental Company out of London.

George James Thompson.

The within deposition of the said George James Thompson was taken, upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 1st day of February 1866.

James Traill, Stipendiary Magistrate.

Greenwich Police Court, 2d February 1866.

2 February 1866.

JOHN JONES, upon his Oath, saith:

I AM residing in the Camberwell-road. I was Chief Engineer on board the ship "London," on her last voyage. I hold a certificate of competency as first engineer from the Board of Trade. This was my first voyage in that vessel. She left London on the 28th of December last. Her machinery went without giving us the least trouble as far as Plymouth. The ship was under the command of a Trinity House pilot. The second and third engineers, Mr. Greenhill and Mr. Harman, were in the engine-room with me when we left the docks. The engineer's staff consisted of first, second, and third officers, leading stoker, storekeeper, six firemen, and three coal trimmers. The second engineer also held a certificate of competency from the Board of Trade. Our fires were lighted, and the engines were working slowly on leaving the docks, although we were in tow of a tug. When off Dungeness the weather became rough; the engines worked well at six or seven knots an hour. I kept a log-book, which was lost with the ship. Nothing particular happened in our department between London and Plymouth. We arrived off Plymouth at daylight on the morning of the 5th of January. We had about 50 tons of coals on deck on leaving London, and we had five or six tons left when we arrived at Plymouth. We left Plymouth just after midnight of Friday the 5th, previously to which we had replaced the coal that we had used from London to Plymouth; it was stowed away on deck, partly round the engine-room hatch and the steam chest; it was placed there for immediate use; it was the practice to do so at starting. That coal was reduced by consumption, and we had not more than 20 tons left when we met with our misfortune on the 11th of January. On leaving Plymouth the weather was mild. A portion of the coal was washed away on the 11th; at last some of the coals were washed about the deck. I saw some lots of nobbs of coal tumbling about as she shipped the seas. When the coal broke loose in that way, the other coals were allowed to remain. I did not observe it thrown overboard; it might have been, after we shipped the big sea. Before we shipped the big sea, I was injured by being thrown against the scuppers. After leaving the breakwater at Plymouth we went at a speed of eight knots an hour; I judged that by the revolutions of the engines. The weather continued very wild during the whole of the 6th; the breeze began to freshen a little in the evening; the weather continued to freshen a great deal on the 7th (Sunday), but was not squally; the wind and sea began to increase. I think she kept her course under steam during the whole of that day. She had not made any water, that I am aware of, up to the 7th. On the 8th of January the wind increased almost to a gale, and Captain Martin about eight a.m. gave orders to stop the engines, lift the screw, and put the fires out. The weather continued the same on that day till about five in the evening: then the wind moderated, and we got up steam again. About midnight of Monday the 8th, the wind began to increase, and continued increasing up to the time the ship went down. I don't think the wind lulled at all. On the morning of the 9th I think one of the life-boats was carried away. We were steaming all this time. I don't know of my own knowledge that the boat was carried away on that morning. When I went on deck that morning I saw the foretop-mast, the top-gallant mast, and the royal

2 February 1866. royal mast hanging down. I did not go sufficiently forward to see the jibboom. The masts were hanging in-board against the big mast. The crew was busy about the ship; I can't say exactly what they were doing; I can't say the time. I did not see the spars that day secured; they were the following day. The ship was labouring violently at that time, which caused the spars to swing to and fro; up to this time she was steaming with her head to the wind. On the 10th (Wednesday), I saw that the spars were secured, lashed to the fore-mast. While her head was to sea on the 9th, she was not shipping much water; a little, I did not think much of it. The engines worked well during the 9th, and the engine room was quite free of water; they worked well up to three a.m. of the 10th; at that hour orders were given to Mr. Greenhill by Captain Martin to go full speed. It was not then my watch; my watch commenced at half-past four that morning. I then went into the engine-room; that watch continued till half-past eight; she continued to go at "full speed" during the whole of that watch. I was relieved by the second engineer, and did not go on watch again till half-past four in the afternoon of the 10th; that watch continued till half-past eight p.m., when I was relieved again by the second engineer; it was then blowing a complete gale of wind. When that watch commenced I found things all right in the engine-room; the engines were going full speed; no casualty occurred in the engine-room during that watch. When I was relieved at half-past eight p.m. I went into my cabin, where I remained till half-past 10, when a big sea came and washed the skylight of the engine-room away. I came from my berth directly and went to the engine-room, where I found the second engineer standing by the engines: the engine-room was flooded, and a body of water was coming down through the hatch. I ran upon deck, and saw that the whole of the skylight of the hatch was gone; I saw the aperture; I could not see whether the skylight remained on deck. I then went below, and in a minute or two afterwards the engines stopped of themselves; the water came down right over the engines and ran into the stoke-hole. The fires were completely out when I went down into the engine-room the second time. This all occurred in a very short space of time; the engines stopped about 10 minutes after shipping the sea. The sides of the engine-room skylight and bars across were of thick wood, with glass. I can't say how the skylight was fastened, for my time on board the "London" was so limited. On finding the fires out we shut the door of the after bulkhead. I then went upon deck; the water still at times streaming down the hatchway, as she shipped the seas. The ship was labouring heavily, and shipping heavy seas. I remained on deck, and tarpaulings and canvas was brought and placed over the apertures; I can't say how it was done. It was blowing a complete hurricane, and the seas were blowing them away. The sailors had the flying-jibboom there to put down, but the men and materials were washed into the lee scuppers. I did not observe the skylight, or any part of it afterwards. The deck pumps were going. I did not see anything to complain of on the part of any of the crew; many of the passengers assisted at the pumps, and baling with buckets. The saloon as well as the steerage passengers worked also. I cannot say whether any attempt was made to ease the ship with canvas. I met with an accident previous to this on that morning: I was going to breakfast in the cabin when a heavy sea struck me, and threw me into the lee scupper, injuring my shoulder. I was not much on deck during the night; things remained in the same state till the morning of the 11th (Thursday). I went on deck that morning just before daylight; she was continually making water, and increasing. After daylight I noticed that the ship was in a disabled condition, rolling in the trough of the sea, and continually swept by the waves. I know nothing of the bursting in of the stern ports. About two o'clock on the afternoon of that day, the 11th, I ran upon deck, ran across the poop-deck, and found the port cutter had been launched, and was alongside; I jumped into her as she rose with the sea, and away she went; I believe I was the last person to get into the cutter. I saw the captain just before I got into the boat: he was between decks, going towards the saloon; he asked me how I felt; I said, "Not well, sir;" that was all that was said, all that I heard the captain say; that was an hour or two, according to my memory, before I got into the boat; that was the last I saw of the captain. I saw the vessel go down; I saw the passengers preaching and praying; all hopes of saving the vessel were gone then. I heard no loud sounds; the passengers were very much composed; there was no loud lamentations amongst the ladies, all that met the ear was a subdued groaning. The ship went down in about three or four minutes after we left in the boat; we had not got more than 80 or 100 yards from the ship when she went down stern foremost. The boat was the boat to which I had been told off in case of accident. We saw the ship's head up as we mounted a sea; then we went down, and when we mounted the next sea the vessel was no longer there; I could not see a vestige of her afloat. We drifted away; we had only a few biscuits and some raw vegetables on board that I am aware of. We drifted for 20 hours. I saw a vessel about nine o'clock on the Friday morning; we bore down to her. We only shipped a little water; we had five oars, and we were able to keep her away from the sea; we had to bale the boat with a tin pot occasionally. We hoisted an old shirt on the top of a pole as a signal to the vessel; the wind at this time had lulled a little, but even then it was blowing a gale. The barque having noticed our signal hove-to and beckoned us on; her topsail was backed, and the log-line thrown to us right on board the boat, and then several larger lines followed, and we were all pulled up on board, 19 in number. All hands, except one that was at the wheel, assisted us on board. The boat was very deep; it was only, I have heard, constructed to carry 12; there were 16 of the crew and three passengers saved; she was steered principally, I think, by the management of the oars; there was a tiller, but there was a constant shouting to pull such an oar, and back water with another, and it was in this way that the boat was kept before the sea. The captain of the barque behaved with

with great kindness to us, in the broadest sense of the term, and brought us to Falmouth on the 16th of January. The name of the barque was the "Marianople." 2 February 1866.

By Captain *Harris*.—I have been six years at sea, and served my time as an engineer; I have been 2½ years as chief engineer. I had a certificate of first class "competency." I was first in the Spanish West India Mail Service, Porto Rico, and Havannah. I was there three years; after that I ran a packet from Hayle to Bristol; then I brought a new boat for Mr. Stothart from Bristol to London. I have not been foreign since I left the Spanish service. Our consumption of coal on board the "London" was from 8 to 10 tons the 24 hours after leaving Plymouth. I mean 8 or 10 cwts. per hour. The coal taken in at Plymouth and deposited on deck was taken into the engine-room from time to time as wanted. We had not commenced to use the coals from the bunkers up to the time of her loss. I should think the screw tunnel was eight feet high by five feet wide. On the 7th January the breeze freshened, and we were going head to wind. Our engines were not strong enough, and we were ordered to put out the fires. Afterwards we got steam up to midnight of the 8th. On the 9th the masts were carried away; we were then, I believe, steaming head to wind; she was still kept head to wind, and driving her against it. The ship pitched and took in a little water, but there was nothing to excite alarm. When the masts were carried away we could scarcely keep headway; she was then going two or three knots. I had received no orders to slacken; there was no appearance of her making any water, none whatever. We had a donkey engine, which we could put to the pumps if necessity arose. The donkey engine was not the one that drove the centrifugal pump. No additional pumps had been on up to that period. The bilge pumps were always in gear when the engines were going, and were then dry.

By Captain *Baker*.—On the night of the 10th, when I left the engine-room, I think the engines were making 48 to 50 revolutions, which would give a speed of three knots. Before the very heavy sea struck the vessel, no water, to speak of, came down into the engine-room. I do not think that any of the spars that I saw knocking about, could have come into collision with the engine-room skylights. I cannot say how she was going, whether head to wind or what, when that sea struck her. When I last left the engine-room there were about 14 feet of water in the room; that was about midnight of the 10th. I did not notice then whether there was any sail on the ship.

By Captain *Harris*.—We shut the door of the after bulkhead as soon as she was disabled. I assisted in shutting the door.

John Jones.

The within Deposition of the said John Jones was taken upon oath before me, at the Greenwich Police Court, within the Metropolitan Police District, this 2d day of February 1866.

James Traill, Stipendiary Magistrate.

JOHN GREENHILL, upon his Oath, saith:

I RESIDE at present at the Isle of Dogs. I was Second Engineer on board the ship "London" on her last voyage. I hold a certificate of competency from the Board of Trade, as second engineer, having been examined in 1865. I joined the "London" on her first voyage as third engineer; was in her in the same capacity the second voyage, and became second engineer on her last voyage. When she last left the East India Docks her machinery was in very good condition. The engines required no repairs, only cleaning, after the second voyage. She had 50 tons of coals on deck when she left the docks on her last voyage. We consumed about 47 tons during the voyage to Plymouth; there we got a fresh supply, making the quantity up again to 50 tons on deck. The engines from London to Plymouth worked very well indeed. On Monday, the 8th of January, at daylight, the wind was blowing hard, but not a gale. I do not know in what direction. On the morning of that day at 7 o'clock Captain Martin gave me directions to stop the engines, he did not say why; it is a common occurrence to stop the engines when the wind is blowing. Towards the afternoon the wind moderated, and at five o'clock we got steam up again and we continued steaming till Wednesday evening. At midnight of the 8th it was still blowing a storm, and the wind increasing; it continued to blow and to increase towards the 9th, I don't know from what direction. I was occasionally on deck. Sometime during the morning of the 9th some of the spars were carried away by the gale, but I was not on deck at the time. I saw them afterwards; the foretop-mast, top-gallantmast, and maintop-gallant and royal-mast were hanging from the rigging aloft. The jib-boom I did not see, but I understood it was carried away also. The masts were hanging, but not swinging much; I afterwards saw that they were made secure by being lashed to the masts; the jib-boom I afterwards saw on deck, forward, on the Wednesday afternoon. It was lashed to a spare topmast, as well as my recollection will serve me. The port life-boat was washed away on the Tuesday before I came on deck. The gale continued to increase during the whole of Tuesday (the 9th). The chief engineer, Jones, continued to keep his watches up to the Wednesday. On the morning of Wednesday at three o'clock, we were going half-speed, when the captain ordered that full steam should be got up; he gave me the order himself; I was on deck; he said he intended to turn the ship round and run for Plymouth; those orders were obeyed. Being much below, I cannot say how the wind was. Up to that time the engines were in good working order, and the skylights were

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perfect. I don't know whether she bore up or not. I have no reason to doubt that she bore up at three o'clock. I came on deck again between seven and eight o'clock, and we then were nearly head to wind. I thought we were going to Plymouth. I understood the wind had changed. During the 10th the wind blew very hard, with a heavy cross-sea running. At half-past 10 o'clock on the night of the 10th, the engine-room skylight was washed away by the sea; I was in the engine-room at the time: a large body of water came down; there was a succession of seas; and in three minutes the fires were put out: the engines run for seven or eight minutes after the fires were out. The engine-room skylight was of teak wood. A deal of the glass, the small parts of the glass, and some of the wood came down into the engine-room with the sea. The skylight was closed at the time the sea struck her, and was fastened inside and outside, and battened down with tarpaulings; they were battened to the combings of the skylight; I am quite sure of that. The tarpauling was on all the Wednesday; I had noticed it battened down during the Wednesday. After the rush of water through the hatchway, I went on deck; two men, one a passenger, the other a sailor, were washed down at the same time into the engine-room. There was a sliding-door in the bulkhead of the engine-room, it was open when the sea broke in, but it was closed in a few minutes after the skylight was carried away; as soon as I could leave the engine. The fires were put out by the water washing about. The bottom of the furnaces are five feet from the floor. When the fires were put out, the water was not within 18 inches of the lower part of the tunnel door. I shut the door to keep the water out; no water had gone into the tunnel when I shut the door; it works in a groove, and is secured with a screw. When that door was closed, no water could get into the tunnel in any quantity. The pressure of the water in the engine-room against that door could not have lifted it, unless the bulkhead was forced in. I came on deck about a quarter to 11 o'clock, after the fires were out, and water-tight door shut: there was then about five feet of water in the engine-room. The chief officer, and several of the crew and passengers, were endeavouring to secure the hatch with tarpaulings, sails, mattresses, and beds. Two ladders and a spar were placed over the hatch as supports for the tarpaulings; that prevented the water, in a great measure, from going down: they kept on trying to stop it till about four in the morning; about that time the stern-ports were broken in: about that time there were 14 feet of water in the engine-room, notwithstanding the attempts to stop it. When the stern-ports were driven in, I noticed a considerable increase of water between decks; the ship was considerably lower then: she then began to settle down by the stern. At daylight she was gradually settling down. I am not sure about what sails she had; she was then head to wind. I heard Captain Martin, who was on the poop, order the boats to be got ready. The two pinnaces and the port cutter were cleared ready for lowering, and bread and water put into them. The starboard pinnace was launched, and went down as soon as she got to the water; her forward end was, I think, lowered too fast: she was swamped. She was not lowered by patent tackle. Five persons were in her; four of them got up the ship's side; all five got on board. The same thing might have happened to a timber-built boat, under similar circumstances. That was the only boat launched then. At two o'clock the captain ordered the port cutter to be lowered; that was done safely, with common tackle falls. I was in the boat, with six or seven more. The boat belonged to me as second engineer; it was the boat I was attached to. The captain came to me at five minutes to two, and told me that the boat was ready for lowering, and I was to go in her. I said, "I did not believe it was any good." He answered, "It was the only chance;" he remarked, "that there was no chance in the ship; that there was some in the boat." I then went to go into her, and, as I parted, he shook hands with me, and bid me "Good-bye," and "God speed me." I then went to the boat, and it was lowered soon after, in a few minutes. The first engineer and several others, altogether to the number of 19, got in; we then pushed off, seeing that the ship was going down; and, in four or five minutes after leaving the ship, I saw her go down stern first. I heard nothing whatever said to the captain about his joining us. I had a compass; and one of the sailors called out before the boat was lowered, while in the boat, and asked the captain what was the course; captain called out, "E. N. E.; 80 miles to Brest."

We shipped a good deal of water in the boat; and we baled a good deal of water during the night, with two or three tin cans and a bucket. We fell in with an Italian ship; taken on board, and treated very kindly, 20 hours after we left the ship. Both the life-boats had been carried away.

By Captain *Harris*.—The conversation took place between the captain and myself, upon the poop. One life-boat had been carried away on the Tuesday; one stove in; and the other life-boat was carried away. There were two boats went down with the ship. After we shoved off, I noticed a rush to the remaining pinnace; it was then too late. About noon on that day the foresail was set, and the ship was got before the wind; but, finding she shipped more water, she was brought to the wind, and she still took seas over all; there was a great deal of water rolling about the deck. As she lurched to leeward, she took the water in over her bulwarks: a great portion of that water would find its way down the hatchways. I was on the poop at the time that I heard of the stern-ports being washed in; the water went right below; it was about four in the morning when they were blown in; I did not go and examine the stern-ports. The sliding door was fastened with a screw fixed between decks, and I feel certain that I screwed it down. The substance of the bulkhead in which the sliding door was fixed was, I think, 5-8ths of an inch in thickness. The lifted bulkhead of the engine-room came up to the lower deck. The ship
made

made but very little water until she was struck with the heavy sea that carried away her engine-room skylight. The sluice-valves from the engine-room to the main hold was open from the time we left Plymouth. Had there been any water in the main hold I must have seen it running into the engine-room through the sluice valves. I did not hear anything said by Captain Martin about the height of the barometer. After the water had broken into the engine-room Captain Martin repeatedly spoke to me, and was in good hopes of saving her, thinking the weather was moderating; nearly all hands were then employed in getting the water out from between decks with buckets, through the saloon, up to the poop. The donkey engine was at work till the ship went down; the lead of the pumps went to the main hold. When the fires were extinguished, there were no coals on deck: they had been thrown overboard, and the forward bunkers had been open a few hours. There were no coals on the deck at the time the skylight was washed away. For many hours before I left the ship I was sensible that the ship was going by the stern. The screw was in its place when I left the ship. At eight o'clock on the Wednesday evening (the 10th) I went along the tunnel and found the stuffing box at the end of the screw-shaft quite tight. Never heard that the top-gallant mast came down and smashed the skylight. I saw the ladders and spars placed across the aperture of the engine hatch, and beds, mattresses, and tarpaulings put over.

By Captain *Baker*.—At one o'clock on the day I left the ship I sounded the engine-room, and found 19 feet of water; Captain Martin was with me at the time. When we hove-to, after the attempt to run before the wind, I think the mizen staysail was set, but I am not certain. We had no difficulty in lowering the boat I went away in.

John Greenhill.

The within Deposition of the said John Greenhill was taken upon oath before me, at the Greenwich Police Court, within the Metropolitan Police District, this 2d day of February 1866.

James Traill, Stipendiary Magistrate.

Greenwich Police Court, 3d February 1866.

3 February 1866.

WILLIAM HART, upon his Oath, says:

I LIVE at No. 24, Westminster-road, Surrey, carpenter. I was carpenter's mate on board the ship "London" on her last voyage; that was my first voyage in that ship. I did not sign the articles of agreement; I joined her in the East India Docks, and was to have signed the articles at Gravesend, but did not; I was entered as carpenter's mate. I was going to leave the ship at Melbourne; I was to work my passage out at nominal pay of 1s. a month, and that was the reason, I suppose, I did not sign the articles. I was on board a barque last year as ship's carpenter; I have been nine years a ship's carpenter on land and afloat. So far as my own employment, I was well acquainted with the ship "London"; I have no doubt that I should have signed the articles before I left the ship. I considered the "London" to be a very strong and safe ship. No damage to the ship happened on our way to Plymouth; she there shipped 50 tons of coals; most of them were stowed in bags round the funnel. I saw the coal bunker open at Plymouth, but did not see any coal put in. We left Plymouth close upon 12, midnight of Friday 5th; nothing happened on the following day that called for my services: my duty was to do all carpentering and repairing work on board; for the first three days I was only employed in doing odd jobs. On Tuesday morning, 9 January, about 9 o'clock, the foretop-mast and jib-boom were carried away; the weather had began to blow hard during the Monday night. She was lying with her head to wind, under steam, on the Tuesday morning; the jib-boom hung on the starboard bows, right over in the water, and the foretop-mast was swinging about in the rigging; the fore-royal mast was hanging down and swinging with the motion of the ship. At 10 o'clock, the main-royal mast was carried away, the main top-gallant mast was not carried away. We tried to get the jib-boom in board, but could not succeed, we could not get hold of it. The jib-boom was not likely to do any damage to the ship by striking against the ship. I don't know what sail was set at this time. I am acquainted with the fastening of hatchways. The engine-room hatchway skylight goes in a rabbet, and fitted with brass fastenings on the inside. The frame of the skylight was of teak wood, the thickness of the glass was $\frac{1}{2}$ -inch, and size 12 inches by 9 inches, I should think; the glass was plate glass. As a ship's carpenter, I should say that the hatchway was sufficiently secured. The grating that covered the glass was $\frac{1}{4}$ -inch galvanized iron, round bars, 2 inches apart. I don't know whether there were any cross bars. The rabbet was of the depth of an inch and a half; the framing of the skylight was more than 3 inches thick. On the night of the 10th, the engine-room skylight was carried away about 10 o'clock; Mr. Angel, the third officer, called me from my berth to come aft to secure the skylight; I went aft, and was washed by a heavy sea against the steam winch; the sea came in on the portside, broadside; as soon as I could go aft, about two minutes, I found the skylight had been carried away: it was knocked right off to the starboard side, it was lying on deck to leeward, it was flat on the deck as it had laid on the combings; the skylight appeared

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appeared to be whole. I helped try to lift it on again, there was very little glass, if any; the heavy sea sent the hands, about 20, and the skylight down to leeward again, and then it was smashed all to pieces. We then tried to get some sails over the hatchway, and to haul them to the combings; we nailed the sail to the combings, but, as fast as we did it, it was washed off. Before the hatchway was carried away, it was battened down with tarpauling, and a large sail, doubled; that was done on Tuesday morning, 9th; the carpenter and myself did it. After the sail was blown away from off the hatchway on the Wednesday night, we put a spar fore and aft and some boards, and put over the hatch and some sails, and they were carried away; after the boards were gone, the spar remained, and we filled the space up with beds and mattresses, which rested on the engine. On Wednesday afternoon, the flying jib-boom was brought aft, and placed alongside the combings of the engine-room hatch; I saw the boatswain lash it to the ring bolts; it lay right fore and aft with the combings on the port side; the jib-boom went right to the combings of the after hatchway; the frame of the skylight lapped a little over the combings of the hatch; the middle of the spar came to the afterpart of the skylight; it was lashed with 2½-inch new rope. When the skylight had been washed away, I noticed the jib-boom washing about the deck, it was no longer lashed. The thickness of the jib-boom was 9 inches to a foot, and was flat on the deck, raised on chocks. The battens of the skylight was nailed with 3-inch batten nails to the combings, close down to the deck, about a foot apart; the battens ran the whole length of the combings, and made of American elm; the nails were driven home. The brass fastenings of skylight work from the inside, hinged down to the combings, with two or three fastenings on each side. The tarpauling when battened down would protect the edge of the frame of the skylight, the tarpauling being battened to the bottom of the combings. When I saw the skylight had been washed off, I noticed that the sail and tarpauling had been torn away close to the battens, and carried away with the skylight. I did not notice whether the fastenings of the skylight were broken or torn away; I consider that the sea and flying jib-boom together carried away the skylight. The canvas and tarpauling was torn and carried away on the port side; we were employed the whole of the night in nailing down sails and tarpaulings over the hatchway, but the seas kept constantly carrying them away. About three o'clock on the morning of the 11th, I was called from the hatchway by the purser to secure the ports, stern ports, on the port side. I went to the stern ports and saw the sliding shutters down, which had been down since the Tuesday morning; the upper parts of the shutters were working in and out, and had knocked the sashes right in, two on each side of the ship; the grooves of the upper part of the shutters had been driven in, and had broken the glass of the sashes inside the shutters; the heading of the top frame, and partly down the side of the shutter was broken in; the frame outside was of iron, but the inner side was of wood, three-quarters of an inch in thickness; the inside the window sash there was a great thickness of wood. I got a small spar and endeavoured to secure the ports; not a great quantity of water had at that time come in. I shoved each shutter to the beam of the cabin; that stood a little while; and as the ship got deeper in the water, about six o'clock in the morning, the sea smashed them in, and water then came in, in large quantities, and ran through the upper saloon into the lower saloon; as she settled down, the sea continually ran in; only two of the stern-lights, the port-side, were stove in, and at seven o'clock, the two on the starboard side were partly forced in, and water coming in at those ports. About eight o'clock that morning, the carpenter gave me orders to get the boats ready; I put plugs in all the boats; there was the port cutter, two pinnaces, and a jolly boat, the two life-boats had been previously washed away, also the starboard cutter; the life-boats had been carried in the davits abaft the pinnaces; the life-boats were washed away on the Tuesday morning; about nine o'clock on the Thursday morning, 11th January, one of the iron pinnaces was lowered; she filled and sunk; I saw her lowered. I was engaged at that time getting the port cutter ready. About two o'clock in the afternoon of that day I got into the cutter and assisted in lowering her. After the iron pinnace was lost between 9 and 10 o'clock, the captain gave orders to loosen the fore-sail and brace the main yards round, so that the port side of the ship could be brought to the lee side, and the ship was brought-to on the starboard tack; as soon as she came up to the wind the foretack was carried away; nothing more could be done then. The ship rolled about in the sea; the mizen-staysail had been blown away that morning while she was on the port tack; I am certain of that. I did not consider it any use to signal, nothing could be seen; we were all looking out. I am sure that it was the mizen-staysail that was blown away on that morning, and not the davit. We had a great difficulty in getting into the boat, for the ship sucked her in; we waited for a smooth, then we lowered her; as soon as she pitched in the water we unhooked the tackle pall, got our oars out forward and shoved her bow round before the wind; others jumped in, and we pushed the boat around; we then pushed off, thinking she would get too full; and in three to five minutes I saw the ship go down, stern foremost. We were 20 hours at sea, and ultimately picked up by an Italian barque, and brought to Falmouth.

William Hart.

The within Deposition of the said William Hart was taken upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 3d day of February 1866.

James Traill, Stipendiary Magistrate.

3 February 1866.

WILLIAM DANIELS, upon his Oath, saith :

I RESIDE at No. 13, Marsden-terrace, Kentish-town. I was quartermaster on board the ship "London," on her last voyage. I went the voyage to Melbourne and back in the same ship, and in the same capacity on the previous voyage. Nothing particular occurred, except rough weather, during the last voyage, between the East India Docks and Plymouth. On the morning of the 6th of January, 20 minutes after midnight of the 5th January, the "London" left Plymouth; the weather was fine. Shortly afterwards it began to blow, and on Sunday evening it began to blow hard from the south-west, and increased in violence up till Tuesday the 9th, at 12 at noon. About seven o'clock on that morning the port life-boat was washed away. The ship was then on the starboard tack; the sea, in a lurch, hit the boat and unhooked it from the tackles, and carried it off. I was at the wheel at that time; the course steered was full and bye. The vessel was heading about W., I can't say exactly to a point; wind S. S. W. I am sure the ship was on the starboard tack; the wind must have been N. N. W. I was at the wheel when she tacked. She was brought on the port tack at three o'clock in the afternoon; I cannot say the day she was brought round head to wind. We hauled the fore and aft canvas down, and brought her on the port tack, and then set the fore and aft canvas again. We were under steam, going slowly ahead; her head then lay N. N. E.; the wind N. W. I did not hear any directions given to make for Plymouth, but I concluded she was making for Plymouth when she was put round. At four o'clock I was relieved and went below. I don't know the day. I know the time the sea broke into the engine-room; it was on Wednesday night; we had turned round before that, but whether it was on the Tuesday or Wednesday I can't say. We were still on the port tack when the engine-room hatch was carried away, on the Wednesday night. The sea broke into the hatchway on the Wednesday night, but whether it was on that afternoon or the Tuesday afternoon that she was put on the port tack, I don't know. She was put on the starboard tack again on the Thursday, the day she was lost, about 10 or 11 in the morning; that was to bring the boats on to the lee side. The mizen-stay sail was standing when the ship went down; also half her main-top sail was set; the other half had been blown away, the starboard side, just after the engine-room hatchway was washed away. She was on the starboard tack when she went down; her head was about W., and the wind N. W. A little after 10 o'clock on the Wednesday night Mr. Angel, the third officer, came below and called all hands up, passengers and all, barring the women, whom he told to remain below; he said he wanted us to come and lend a hand to secure the hatchway; we all went up, and when I got aft they had one sail just covering over the engine-room hatch; we got more sails and nailed them down to the deck one after the other. I saw the skylight down to leeward; I can't say whether it was broken or not. I remained on deck; did not go into the engine-room; I went between decks. I don't know what became of the skylight eventually. I went to the wheel again at 2 o'clock on the morning of the 11th, the day she went down, she was then heading N. N. E., and the wind was N. W. or N. W. by W. Sometime on the morning of the 11th, her stern ports were stove in. She took a sea right over all and washed me and the boatswain forward. I found that the ship was settling down fast at 2 a.m., before the stern ports were forced in. She still kept settling, but I did not notice that the stern ports, being stove in, made much difference; I remained at the wheel till four; she was still close to the wind. I went again to the wheel at six, and remained till I left in the boat; all hands were employed in baling water from the lower saloons.

By Captain *Baker*.—We were never before the wind from the time we left Plymouth, except the few minutes that we were wearing the ship round; and during the time we were before the wind the ship rolled and laboured heavily, and the seas coming right over the poop. I am quite certain that the ship was never before the wind, although we had square sails set sometimes. About two o'clock in the afternoon the port cutter was lowered, and was shoved off with 19 persons in her. Sometimes I rowed, and sometimes steered. I pulled the bow oar when I left the ship. I have been 13 years at sea.

By Captain *Harris*.—When we put her round by her engines she gave a heavy lunge, but nothing was carried away. When we got her round on the port tack I fancied that she lay-to better on that tack than on the starboard. I saw the jibboom when she was got inboard; she had gone off at the cap, and came on the weather side abreast of the fore-chains, just floating by the side of the ship on the starboard side; it was got inboard on the Wednesday afternoon; we had standing channels. When we got the flying jibboom in it was lashed. I saw the man cut one of the lashings, the after one, to put it over the engine-room hatchway after the skylight had been washed away. There were a lot of persons at the fore end of the jibboom lifting it up, but whether the lashings at that end were cut or not, I don't know.

The mark x of *William Daniels*.

The within Deposition of the said William Daniels was taken upon Oath before me, at the Greenwich Police Court, within the Metropolitan Police District, this 3d day of February 1866.

James Traill, Stipendiary Magistrate.

5 February 1866.

Greenwich Police Court, 5th February 1866.

DANIEL THOMAS SMITH, upon his Oath, saith :

I RESIDE at the Bull's Head, High-street, London; I was boatswain's mate on board the "London" on her last voyage; I have been 17 years at sea, chiefly on foreign voyages: that was my first voyage in that ship. The weather on leaving Plymouth was very fine and continued so till Sunday, the 7th January, when the wind freshened, and it increased, but not with great violence till Monday; on Monday it increased a great deal from S. and W. It was a strong wind, it came on about 10 o'clock in the morning; we had no sails set, under steam, and had our head to wind; the wind increased till about six that evening to a full gale, when they set the mizen staysail, the fore-staysail and the maintop-mast staysail, and reefed spanker. About eight o'clock the maintop-mast staysail was carried away; nothing more occurred till the Tuesday morning; on the Monday night, when carrying the sails that I have stated, she was on the starboard tack. On the Tuesday morning, about nine o'clock, I was on deck, and saw the jibboom carried away; at the same time the vessel pitched and further carried away the foretop-mast, foretop gallant-mast, and main royal-mast; no injury was done to the ship by this loss. The jibboom went overboard on the starboard side, the weather side, and the masts hung down abaft; that is all that occurred on that day that I am aware of. We tried to cut away the wreck of the masts, but the sea was so violent we could not. We got lines and secured the foretop-mast round the fore-mast, the main royal was left hanging, but not in a situation to do any harm. On the afternoon of Wednesday, the jibboom was got in, which had been floating alongside all night; we did our best to get it inboard on Tuesday, but could not. After we had got it inboard, we lashed it to the after part of the fore-rigging on the port side; it was lashed to ring bolts; the ship was then on the port tack. A portion of the flying jibboom was got in shortly afterwards, and taken aft, and lashed by the after hatchway on the port side; the length of the piece of flying jibboom that was in board was 25 feet, and passed to, and lay alongside of the engine-room hatchway. I secured the after end; it was lashed to the stanchions; I took five turns and fastened it, as I would a spar, to the stanchions of the staircase of the after hatch; it was secured about four in the afternoon of Wednesday; I saw it again at seven o'clock safe; I did not see that it was loose; I did not see that it struck the combings of the hatch; I did not see it in motion or loose at all before the skylight was washed off. I have never said that I saw it knocking about the deck and striking the combings of the hatchway. I did not see the flying jibboom again from seven o'clock on the Wednesday evening until an hour after the engine-room skylight had been carried away, and I then saw it put down the hatchway, the end of the boom was put down; I did not see it cast adrift; when I saw it the men were in the act of putting it down the hatchway. All the water that the ship was then making she was taking down the hatchway; the scuppers at that time were blocked up, I believe, with coal; the coals had been cleared off the deck on the Wednesday afternoon, some of them thrown overboard; and it was after that I saw that the scuppers were choked, and I tried to clear them with a piece of bent iron, round bar iron, and I did not succeed in clearing them; the scuppers are bent; it was the after scuppers on the starboard side, two of them, that I tried to clear; we were then on the port tack; I did not try the port scuppers; I do not believe that the water ports were open; I did not see them open; the flying jibboom, and beds, mattresses, were put over and stuffed in the hatchhole, the jibboom was pointed down into the engine-room; we could not get a tarpauling over the hatch, the sea was too rough for that. I went below at 12 at noon on the Wednesday, she then was on the starboard tack; I came up again at four o'clock in the afternoon, and she was then on the port tack; I then remained on deck until I left the ship on the Thursday; she remained on that, the port tack, from four o'clock on the Wednesday till she wore round about one o'clock on the Thursday to enable us to lower the port cutter. When we left her she was on the starboard tack with her head to wind.

By Captain *Harris*.—I cannot tell which way the wind was; when we went away in the boat we went before the wind, and had to keep her to the southward and eastward before the sea; the wind was dead aft. On Monday the 8th, we were under fore and aft sail, and I believe the steam was then up. When the jibboom was carried away we were on the starboard tack, and it was my forenoon watch; she was pitching very heavily before the jibboom was carried away: on the following day we got the jib in, Wednesday; we got it in on the port tack; the watches ceased to be kept regularly after four o'clock on the Wednesday afternoon. The flying jibboom was securely lashed. At the time the stern lights were driven in, I was down below in the sail room passing up the sails. I am not aware that I ever said that a sail was thrown down the hatchway, rolled up instead of being cut open; there was a great deal of water then in the main deck; I cannot say how the water was coming in at the saloon. As soon as the hatchway was carried away the pumps were manned and the donkey-engine set, and was going when we left the ship; I did not see the fires of the donkey-engines being washed out. The flying jibboom was lashed to the deck directly it was brought up. It was lashed at four o'clock; I saw it again at seven o'clock secure.

By Mr. *Traill*.—I came on deck directly after the engine-room skylight had been carried away; I saw it lying flat on the deck on the starboard side; I assisted to put it on again,

again, but could not do so, and it was smashed to pieces; we made two or three attempts to get it on before it was smashed to pieces; I did not notice the tarpauling upon it, or what became of the frame after it was broken up; I am not aware that the ship made any water prior to the hatchway being washed off. The after hatchway was battened down; I believe that was battened down on the Tuesday night; I assisted in putting a sail over the engine-room hatch, and nailing it down to the deck on the Tuesday night, the night before the skylight was carried away; I don't know whether there was any tarpauling over it or not

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By Captain *Baker*.—The ship was not kept before the wind while I was on deck, and I am not aware that she was ever before the wind, except the few minutes, in order to lower the port cutter. She was on her wind when the main-topsail was split; she was then on the port tack. I had seen it set, and saw the starboard half carried away six or seven hours after it was set; I never saw her before the wind; my impression is that she never was, except when she wore round just before we left the ship; we were on the starboard tack when the fore-topmast staysail was carried away. The engines were going when the jibboom pitched away. This was my first voyage in that ship; she did not seem to labour more than any ship would in such weather, the sea being very high, a high cross sea; this was my first voyage in a steam-ship. There was no difficulty in wearing her, she went round at once.

By Mr. *Traill*.—I cannot say how the wind was, or which way the head was; she was close hauled all the time I was on deck. Several of the crew were below during the night; some were hurt; they did the best they could till they were worn out; the spider rail forward was carried away, but not aft. The top-gallant yards were not sent down.

The mark x of
Daniel Thomas Smith.

The within Deposition of the said Daniel Thomas Smith was taken upon Oath before me, at the Greenwich Police Court, within the Metropolitan Police District, this 5th day of February 1866.

James Traill, Stipendiary Magistrate.

WALTER MOLESWORTH EDWARDS, upon his Oath, saith:

I RESIDE at Bedford; I was midshipman on board the ship, "London," on her last voyage. I joined her on the 28th of December, the day of her departure from the East India Docks; it was my first voyage going to sea. We left Plymouth at a little after midnight of the 5th Jannary. The weather was quite calm and fine, and so continued till Saturday afternoon, 6 January, at four o'clock. It then began to blow hard; I was not sick or ill at all. From that time, till the following Wednesday evening, with the exception of a short time on Tuesday, I was on deck the whole time. I then, on Wednesday evening, went below, and remained till the engine-room hatch skylight was blown off, at half-past 10 o'clock. I remember the jibboom going over; I was aft at the time. On Wednesday it was brought inboard; on the Tuesday, I saw it on the port-side; on Wednesday, after it was brought inboard I saw it at 11 o'clock in the morning, on deck, just aft the funnel on portside; the thickest end was aft; it was not fastened; it struck against the bulwarks on the port-side, and then against the engine-hatch, it was beating in that way all the day. I saw it in the same state between three and five in the afternoon. I saw no attempt made to secure it; I was on the poop, near the wheel, at the time. I did not see it later than between three and five on the Wednesday, till the next morning; it was beating sideways against the framework of the hatch. I was on deck till eight o'clock that night; it might then have been lashed to the stanchions. I did not notice it after the afternoon. I was below when the engine-room hatch skylight was carried away, but I did not come upon deck till Thursday morning, at 10 o'clock. I saw the skylight then on the port-side; it was quite whole, not broken at all; not even the panes of glass, nor the framework. That was the engine-room skylight; I am certain about it. I saw no attempt made to put it into its place. I did not remark it to any one; the captain was on deck at the time; he must have seen it. The iron pinnace was being lowered when I came upon deck; nearly all the passengers were on deck then, and when the pinnace sank, they went below into the saloon. I heard the captain dissuade a lady from going in the boat that we left in. The iron pinnace was sunk on the starboard side. The skylight was being washed about on the Thursday morning, and was a little further forward than where it had been washed off; I did not mention it to anyone. I had mentioned something else just before, to Mr. Angel, one of the officers, and he told me to mind my own business. Between half-past one and two on the Thursday, the captain's gig was lowered on the port side, the after one; that was the boat we were saved in; I jumped in off the shrouds. I asked King and Daniels to let me in; they said "Jump," and I jumped in. Another midshipman was on the next shroud, and he was afraid to jump, and was lost with the ship.

By Captain *Harris*.—Daniels was our hammockman; when I got in the boat, I sat in the bow by side of Daniels. We had a bag of ship-biscuits (200 cwt.), two bottles of brandy, and two of champagne, and some turnips and carrots. We had some water, which was
150. spoiled,

25 February 1866. spoiled, and thrown overboard, being mixed with salt-water. Quin put one bottle of brandy into the boat; I put three of the bottles under my coat; Mr. Greenhill and Daniels knew that I had them; Mr. Greenhill messed in the saloon. Jones and the third engineer in their own cabin.

By Mr. *O'Dowd*.—At three o'clock, on the following morning, a sea broke over the boat, and we baled it with buckets; previously to that, we baled it with a little pot. We were picked up by an Italian barque about 10 o'clock on the Friday morning. King and Daniels had charge of the boat. The second-class steward, Gardiner, was saved in our boat. About one o'clock I was talking to Mrs. Owen; she was going, with her little child, in our boat, but the captain dissuaded her; he saw there were several drunken seamen who might get into the boat, and therefore advised her not to go; he said, that by staying, it would only be a speedy death to a lingering death. At five o'clock on the Thursday morning the captain came into the saloon and said, "Ladies, there is no hope for us, I am afraid; nothing short of a miracle can save us." The passengers had their meals regularly on the Tuesday and Wednesday, but the captain did not come down to meals on the Tuesday or Wednesday. On Wednesday afternoon, the donkey-engine fires were put out by the sea, and the pumps were worked all that night by hand; on the Thursday morning the fires of the donkey-engine were again lighted, and that engine worked till the ship went down. On that morning, from five to 10, I was below in the saloon; the passengers were praying and sobbing; there was no screaming. After the captain had told the passengers there was no hope, he only came down once to get something out of his cabin. At 10 o'clock I went on deck, the captain was on the fore part of the poop; I remained on deck till I got away. King and Daniels directed some sailors, who were waiting to go into our boat, to launch the port iron pinnace, and they went to help them, and while they were so engaged King and Daniels came away, lowered our boat, jumped in, and we shoved off.

By Mr. *Traill*.—The captain retained his self-possession to the last; his feelings only once overcame him, and that was when he advised Mrs. Owen not to go into our boat; he then burst into tears. Mr. Harris, the sailing-master, worked very well; he worked all Monday and Tuesday without a coat; he was chief officer. Mr. Grant also exerted himself to the utmost. All the officers were in possession of their faculties, and behaved remarkably well.

By Mr. *O'Dowd*.—I did not recognise Mr. G. V. Brooke, the actor.

By Mr. *Traill*.—I only knew Mrs. Owen; her cousin was my schoolmaster. All the passengers expected immediate death. I felt some fear on the Monday, but afterwards I was not afraid to go down.

By Captain *Harris*.—I think the ship lay to the whole time; I do not think she went before the wind. The mizen-stay sail was set when she went down, and had been set for some time. On the Wednesday afternoon, between three and four o'clock, a ship passed our stern, and nearly ran into us; we did not sight any ship after that. About two hours after we left the ship, a sail passed our stern. No rockets or signals were made that I am aware of.

Walter Molesworth Edwards.

The within Deposition of the said Walter Molesworth Edwards was taken upon Oath before me, at the Greenwich Police Court, within the Metropolitan Police District, this 5th day of February 1866.

James Traill, Stipendiary Magistrate.

JOHN KING, upon his Oath, saith:

I AM staying at the George Hotel, Aldermanbury. I was an able seaman on board the ship "London," on her last voyage. This was my first voyage in that ship. I have been to sea 13 years, always on foreign voyages. On the day after we left Plymouth the weather began to freshen, and on Sunday evening, the 7th January, it was blowing heavy, from the north-west, I believe; she was then on the starboard tack. We had our stay-sail sheets hauled aft on the port side, and she was under steam; on the Monday, the wind increased to a gale; on that day I was employed in lashing cases on the poop, plants and flowers that were going to Australia. On the Monday night, our spanker blew away; Captain Martin, myself, and a few more, tried to get it in; it was in the first watch, from 8 to 12; it split as we were on a tack; we got it in. I think our fore top-mast stay-sail flew away either on that night or Tuesday. I think it was daylight on Tuesday; the jib-boom was carried away at nine o'clock on Tuesday morning. The starboard cutter was lost, and another boat also; we were then on the port tack. On Wednesday, the 10th January, I fell off the poop, and injured my back; I did not come on deck till Thursday, the 11th January; I came on deck a little after eight that morning. I did not see the skylight of the engine-room hatch on deck; I noticed that the skylight was off the hatch, but did not notice it on deck. I came along the port side of the ship about half-past eight that morning, but did not observe the skylight; the combings of the hatch were there, but no skylight; I don't know how the skylights

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skylight had been fastened. For a quarter of an hour I assisted in hauling sails over the engine hatch, and finding it was no use, went away; the next thing that I did was to see that the starboard pinnace was cleared for launching. The ship was never before the wind while I was on deck, only for the few minutes when she wore round at last, just before we left her; I was in the starboard pinnace when she was lowered; five others were in her. I had my fall in the boat; I told the boatswain's mate, Smith, that he was to take his fall in the boat, and as soon as the boat was lowered we would try and clear her from the ship; Captain Martin gave orders to lower it about an hour before; we could have carried about 50 passengers in her; I told Smith when the ship rolled to let go his fall; I let go mine, he held on, and she sunk, head foremost; a sea came and washed me on to the ship, and I caught hold of the rail of the ship, having been under water about 12 seconds; this was about one o'clock. I then began to clear away the port iron boat; Smith was with me; no one would assist in getting her out, thinking it would be of no use; we left her, and others tried to get her out, but could not get her out; after that, myself and Smith agreed to go into the port gig; we got a bag of bread in her, a breaker of fresh water, not more than a quart, three bottles of brandy, and, I believe, two bottles of champagne; we were then prepared for going; just before she was lowered, and after everything was in the boat, I went to Captain Martin, and said, "Are you going in the boat, Captain Martin?" He said, "No, King, I am not; I am going to remain on board." I said to him, "What is the course for the nearest land possible?" he said, "E. N. E., for Brest." I asked him how many miles was I off Brest; I understood him to say, "90," but it was 190; I then left him, and went in the boat; two compasses were in the boat two or three hours before we got into the boat. I reckon we went before the sea 100 miles before we were picked up, and the captain of the Italian barque informed us that we were then 90 miles from land. I did not attempt to lower the jolly-boat. I don't know how we steered while in the boat. We had not left the ship more than five minutes before I saw her sink, stern foremost; I don't know the direction of the wind; I steered by the pointers.

By Captain *Baker*.—I don't think that the skylight could have been on deck without my seeing it.

John King.

The within Deposition of the said John King was taken upon Oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 5th day of February 1866.

James Traill, Stipendiary Magistrate.

Greenwich Police Court, 6th February 1866.

6 February 1866.

RICHARD LEWIS, upon his Oath, saith:

I WAS an able-bodied seaman on board the ship "London;" that was my first voyage in that ship. I have been 13 years at sea; I shipped in the East India Dock. The weather was very fine when the ship left Plymouth, at 12 at night of Friday, the 5th January. We continued steaming; on Saturday, the 6th, about eight o'clock a.m., the wind began to freshen; it freshened on gradually, and the ship, on Monday afternoon, began to labour heavily, and pitch. I was on deck at the time; it was our forenoon watch, from eight a.m. to 12; at 12 noon I went below; came up at four p.m.; the wind was stronger. She was then on the port tack. She had been on the port tack ever since the time we left Plymouth. I remained on that watch till six p.m.; I know when the pilot had left the ship, and I know that the wind was on the port side when the pilot left the ship; that was on Saturday morning at two o'clock. I then came on deck at eight p.m. of Monday, and remained on deck till 12; at eight o'clock she was still on the port tack, and so she was at 12 o'clock; I then went below. My next watch was from four to eight a.m. on Tuesday morning, the 9th. At four o'clock on that morning, on coming on deck, I found the jib-boom was gone, and I lent a hand to get it over from the port side of the ship.

The examination of this witness was not continued; his answers were incoherent, and he admitted that he had been drinking.

James Traill.

BENJAMIN SHEALS, upon his Oath, saith:

I LIVE at Mr. Conroy's, Ratcliff Highway; I was an able-bodied seaman on board the ship "London," on her last voyage; I have been a sailor 18 years; that was my first voyage in that ship. On leaving Plymouth, at midnight of 5th January, the weather was quite calm, and continued so till Sunday morning at four o'clock; we were on the starboard tack, and had been on that tack since we left Plymouth; the wind came on gradually, and freshened up, and towards evening increased. My watch, on Sunday the 7th, was from 12 noon till four in the afternoon; I went below, came up again at six p.m.; she was still on the starboard tack. I went below at eight, and came up again at 12 at night; the

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wind was increasing. At four a.m. of Monday, the 8th, I went below; there were then between 20 and 30 tons of coal on deck; we had used more than half of what we took from Plymouth. At eight a.m. of Monday morning I came on deck again; it was my watch; it was then blowing hard westerly, I think. None of the coals were washing about then; the bags were all lashed, and the coals were safe in the bags. I remained on deck till 12 at noon, the wind was increasing all the time; nothing happened to the coals during that watch. I went below at 12 o'clock noon; she was still on the starboard tack. I came on deck again at four that afternoon; she was still on the starboard tack; it was blowing very hard then, and she laboured very much; my watch continued till six o'clock. I was more forward during that watch. At eight o'clock p.m. I came on watch again, and remained till 12 o'clock on Monday night; she was still on the starboard tack. I came on watch again at four a.m. of Tuesday, the 9th; we hauled down the fore and aft canvas during that watch, from six to eight o'clock; she was still on the starboard tack at eight o'clock; nothing happened to the coals at this time. At eight o'clock she was pitching deep, and we went out to restore the flying-jib, as it had washed away from the gaskets, and it was half-past eight before I got below. At 12 at noon of Tuesday I came on deck again; she had pitched away heavily, and the jibboom was pitched away, and the head of the foretop mast and main royal mast. The jibboom was hanging on to the starboard bow, and the wreck of the masts were swinging about; I saw that the life-boat, port life-boat, was gone; at the latter part of my watch that boat was washed away. At this time the ship was labouring very hard, and I saw that some of the coals had broken adrift; some had got out of the sacks, I can't say how much, and were rolling and floating about; some of them got into the scupper holes; the lee scupper holes were blocked up; she was still on the starboard tack, and the engines were going. She had not made any water then that I heard; heavy green seas pitched over her bows. I had the watch from six to eight o'clock (Tuesday night); I remained on deck till 10 p.m.; the wind was increasing all the time, and we were employed in baling water from 'tween decks in the second-class cabin saloon; it was blowing a terrific gale, a heavy cross sea. I went below at 10. I came up again at 12, and remained on deck, my watch being from 12 to four a.m., Wednesday morning. I saw the captain on deck during this watch. She was steamed round during that watch; we hauled the staysails down during that watch; she was steamed round on the port tack about the middle part of that watch; I was employed at the time in baling water out of one of the saloons. I think she lay easier on the port tack than she did on the starboard tack, as she did not take so much water over to leeward. I went below at four a.m. of Wednesday, and came upon deck at eight a.m.; the wind was still increasing, blowing a hurricane; all the watch was then called to get the jibboom in; we got the standing boom up, and lashed it into the fore rigging, on the port side. At 12 o'clock on that day, when I went below, the flying jibboom was hanging overboard on the port side. At four p.m. I came on deck again; the flying jibboom was then got in, it had been got in by the previous watch; it had just come over the side; I helped to lash the after end of it to some rings in the fore part of the ship, abreast the cook's galley; it was in two pieces; a heavy sea came on board then and burst away everything. I was injured and carried away, and I don't know what became of either piece of the jibboom; that sea took away hencoops, pigsties, and everything. The ship's water ports were all free at this time. The two midship ports were knocked away altogether; they had been knocked away before this. About half-past 11 that night, she shipped a tremendous heavy sea, and carried away everything. I crawled upon deck upon my hands and knees; I was picked up again, I could not stand, and taken into the forecabin, where I remained until about three o'clock on Thursday morning. A report was then given that the ship was sinking fast; I crawled out on deck. I could see she was going, settling aft. I helped to lash some of the gear that was flying about forward. She was then taking the water right across over her bulwarks, and was freeing herself as she could through her water ports; the water came clean across her, over all; the mizen staysail was set, and a part of the maintopsail. We had no command of her; her helm was hard down; everything was done to ease the ship; neither of the leech ropes of the maintopsail was carried away. I remained on deck all the time. The starboard life-boat and the cutter were then gone, also the port life-boat had gone the day before. At daylight, I heard Captain Martin give the order to clear away the boats that were left; we got to the starboard iron boat about nine o'clock; we swung her outboard; Mr. Harris told some of us to get into her; six got in; in lowering her the bow fall was lowered too quick; a heavy sea came to leeward, and she filled while hanging to the davits; the after fall was then let go, she shot her bow under the ship, and down she went under the main chains; with ropes hanging overboard we crawled on board again. We afterwards prepared the little boat that we came away in, and others went to prepare the other iron boat; we worked at the iron boat for a full hour to get her out, the ship heaving so much, and being a weather boat, we could not get her clear of the side. I left then, and went into the upper after saloon, to see if any water was coming in; that was at half-past 11 or 12 o'clock: I helped to bale some water out of a cabin where there were some ladies and Mr. G. V. Brooke; I stayed there helping for 20 minutes, and came on deck again; three or four more of us got ready the port cutter, we got a bag of bread into her; and one man put some rum or brandy, two bottles; we were going to lower her, when Captain Martin said, "Hold on a bit, man, don't leave yet"; at about that time she took a heavy sea forward, and swept her nearly before the wind; at that time four of us flew to the wheel and hove the wheel hard up; we cut the lee braces. Mr. Harris, the chief officer, ordered us to do this; that brought the ship on the other tack; the

forsail

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foresail was then standing, flying out. As soon as she got round, which was about two o'clock, I found she was settling very fast; it was a miracle that she went round as she did. I am quite sure that the ship was never before the wind, till this time. I never heard anything said about putting her before the wind; she never was before the wind. As soon as she had gone round on her starboard tack, Captain Martin said, "Go into the boat some of you"; 11 of us lowered ourselves down in the boat. I heard one of the men ask Captain Martin if he would come into the boat, the Captain was then standing close by the mizen rigging; he replied, "No my men, I will not come into the boat, I will go with the ship and passengers and crew"; after the boat was lowered three or four feet from the davits, King stepped into the rigging where the Captain was, and asked him the course and nearest point of land; I did not hear the answer; King got into the boat, and Captain Martin said, "good bye, God speed you"; we pushed the boat off; eight more jumped in, making 19 altogether; one of them in jumping in broke one of the oars, leaving us but five; we pulled off, and were picked up on the following day. On the Thursday I saw part of the engine-room skylight lying on the starboard side broken all to pieces; that was about eight or nine o'clock; it was all broken to pieces; flattened right down; I saw it on the Wednesday; it was all right then. I am quite certain that early on the Thursday morning the skylight was broken all to pieces, the wires and the frame broken, lying with the other pieces of wreck.

By Captain Baker.—I am quite certain that the ship was never before the wind. At the time the heavy sea came on board, at half-past 11, on the Wednesday night, was the time that the engine-room skylight was unshipped. I saw the ship go down stern foremost in about three or four minutes after we had left her.

The mark + of Benjamin Sheals.

The within Deposition of the said Benjamin Sheals was taken upon oath before me, at the Greenwich Police Court, within the Metropolitan Police District, this 6th day of February 1866.

James Traill, Stipendiary Magistrate.

JAMES EDWARD WILSON, Sworn:

I RESIDE at No. 4, George-street, Tower-hill; I am of no business. I was a second class passenger on board the ship "London," on her last voyage. I joined the ship at Gravesend. I am connected with mining in Australia.

On Friday night, the 5th January, while at Plymouth, on board, I understood that she was to sail that night; I went to bed, and in the morning went on deck about eight o'clock, and could not see land. The day was fine, a little wind, not much, the ship rolling a little; so much so, that I saw the wall of coals that had been put on deck at Plymouth, roll down in the sacks. The sacks were piled up again with a larger base. I could not tell how many tiers there were.

The wind increased a little towards night; but it was a fine day; the wind dead ahead, as no sails were set.

On Sunday the 7th, in the morning, about eight o'clock, the wind had increased; it was a dirty squally day. I was on deck just before one o'clock; we were under steam, and a few sails set. I could see the engines working. I am not quite clear about that. At noon on Sunday the position of the ship was put up by one of the officers. I remember the distance was 170 miles from Plymouth; towards the afternoon the wind increased.

On Monday, the 8th January, I went on deck about nine in the morning; the day was not so dull and wet as the day before, but the wind still strong, and a heavy sea; on that day, at noon, the position of the ship was put up, and I remember we had run 102 miles since the previous day, making 272 miles from Plymouth; nothing particularly occurred on that day, till tea-time, about six o'clock, when the ship gave a considerable lurch; she was then leaning over to port, being on the starboard tack, she was rolling considerably at that time; some water came down the hatchway, upsetting the tea things; in an hour after a very heavy sea came down the hatchway. The donkey engine was just abaft the house on deck, and the hatch that the water came down was close alongside of it. In two or three minutes some one went up and closed the hatches; this water ran into the port-side, and the water kept coming in till nearly 12 at night, more or less. I went to sleep at two o'clock, and got up again at four o'clock, when there was less water. On that morning, at nine o'clock, I went on deck, no sails were set, she was not shipping so much water as the night before; only a little spray came down then; about 10 o'clock in the forenoon of Tuesday, the ship was pitching considerably; I heard that the flying-jibboom had been carried away; I went on deck, and saw that the fore-royal-mast was broken in two, and hanging down; I went down, and went up again in a quarter of an hour, and found the foretop-gallant-mast hanging down; and soon afterwards I heard that the foremast was gone; I went on deck afterwards, and saw it was so. The day was clear, the sea was strong. The ship was pitching a good deal. All this took place within an hour, the jibboom and masts going. The gale increased on Tuesday night; and water again commenced to pour down the hatchways about seven o'clock; the lids of the hatch were closed, but

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but not fitting tightly, the water came down. Ship rolling very much; during a lull of the sea, we opened the hatch for air; the people in the second class were very frightened and terrified. I understood that the ship was hove-to on that night. The reason that we had to lift the hatch, was that there was a deal of steam came through: on that night the water lay on the starboard side of the ship. I observed that the water came to the starboard side of the ship between seven and eight in the evening. I remember on Wednesday morning that I saw the coals tied together, and the sailors were walking over them; there were some large lumps of coals, too large to go into the bags, were stacked up on deck, and it was those lumps of coals that were rolling about the deck adrift. I had noticed some pieces of coal about on Tuesday or Wednesday morning; I could hear the large lumps rolling about the deck. At daylight of Wednesday the 10th, I noticed a different motion of the ship, not rolling so much, and laying over to the starboard side, and pitching. I then heard that the ship had been put about to go to England. She was more steady than she was the night before. I went on deck about nine that morning; by this time the wind had abated, and very little water coming on deck or down the hatchway. The sea was very heavy; she appeared to me in the motion of a ship close hauled. I went forward near the forecandle, and looked over the portside, to windward, and saw the wreck of the flying boom being towed by the rigging; it was in two pieces, and hanging by separate lines apparently; the ends were all bruised up round by beating against the ship, and knocking against each other; they were just aft of the fore-rigging. During the day I heard the donkey engine going; I was informed it was to get the jibboom in. On that Wednesday night the weather coming on worse, the lids of our hatches were put down, and not opened after. The gale commenced about six o'clock on the Wednesday night; I heard the hatches nailed down; but, notwithstanding, water came in, but not dangerous. At eight o'clock on Wednesday evening, the water came down incessantly down this hatch; I think it came between the combings and the side of the hatchway. Every one was very much terrified. At about 10 o'clock, there was water enough in the state rooms, up to our knees, on the starboard side; some water also came up from the water-closets. The lower bunks on the starboard side were washed with the water, and the bedding carried from the berths. At 11 o'clock, some sailors came to my state room abaft for a sail; and immediately I heard an order given that all men were wanted aft on the poop; I went with others, and got on to the poop, and the wind then was at its height; a piece of the main top-sail was up, the other blown away; I then went into the cuddy; a minister was praying at the time; all the first-class passengers were in the saloon; as soon as prayers were over, some of the passengers went to assist; I then learnt that the fires were out in the engine room, and that the engine room hatch was off; this was five or ten minutes after I had got on deck; I took two lights to light the men at work; a lady held the lights while I went to assist in getting some sails out, and I worked at that for two hours; or about an hour. Seven or eight sails were carried up. After that a proposition was made to carry up water. Before the sails were brought, an order was given to bring mattresses and beds to fill up the hatchway. While I was holding the lights, I saw the Captain and Mr. Greenhill in conversation; soon after that, the passengers began to carry up water; we stood in a row, and passed it; about 80 people were engaged in this work. After working with buckets for three-quarters of an hour, then about one o'clock, between decks, I saw the Captain pass from the engine room to the afterpart, where I was standing; he said, "Men, put down them buckets; come and try and secure the engine room hatch;" men had been working there some time before; the Captain added, "for that is the only chance to save the ship; secure that, and we may keep her up." We left the buckets and went up; we heard another order given for a sail; we turned about, and met some sailors. Captain Martin came and inquired why we were waiting for the sail. At last the sail was brought out on to the deck, which took half an hour; I helped to put it over the engine-room hatch, which then looked like a pile of sails. I saw Mr. Harris nailing it down, in a foot of water. It took us half an hour to get it over; and I think they succeeded in nailing it down; and order was then given to keep the pumps going. I then went back to carry water. The donkey-engine was not going then. Mr. Grant, one of the officers, came round, for volunteers, and I made one, and stopped there till daylight. I saw water coming out of the cabin on the starboard side, and understood it came from one of the stern ports; I remained at the pumps till nine or ten in the morning; I went twice into the cuddy to get volunteers, and something to eat; between nine and ten o'clock the donkey-engine was set going; just before I left the pumps I saw the iron boat lowered. About one o'clock on Thursday I went into my state room and there were two feet of water. I met the captain; I said, "Is it any use to bale this water up?" we had all left off baling water then; he walked along, looked down into the engine-room; he said, "You may, but I don't think it's any use." As I returned from my cabin I found that a change had taken place, and a large body of water was coming into the engine-room. I could hear the plates of the engine-room making a noise. I then made up my mind that the ship could not last long; I went up on the poop and saw the sailors preparing to lower a boat; I stood by; and when she was lowered I took my chance and jumped in. During the night I noticed the engine-room skylight on the lee side; I saw it again at daylight in the morning; it appeared to be whole; a few panes of glass might have been broken. It was on the starboard side; I thought it appeared to be a little wider; not that pitch that she had when on the hatch; I never saw it on the portside. After we had got from the ship 60 to 80 yards, I could see the bow up, and see the donkey-engine working; we went down into the trough of the sea, and when we came up again she was gone. I have been two

INQUIRY INTO THE LOSS OF THE STEAM SHIP "LONDON." 29

two or three voyages across the Atlantic, and to Melbourne. She appeared to be a deep ship; she scooped the water right in at her main chains; that was on the Monday after we left Plymouth. 6 February 1866.

By Mr. *Traill*.—On going down Channel towards Plymouth I thought she was not a good sea-boat; I did not mention it to any one. She was then waiting for a pilot. It did not create any apprehension in my mind.

James Edwd. Wilson.

The within Deposition of the said James Edward Wilson was taken upon oath before me at the Greenwich Police Court, within the Metropolitan Police District, this 6th day of February 1866.

James Traill, Stipendiary Magistrate.

Greenwich Police Court, 7 February 1866.

JOHN MUNRO, upon his Oath, saith:

I AM staying at the George Hotel, Aldermanbury. I was a passenger on board the steamship "London." I have been 5½ years at sea in capacity of sail-maker; was always in the India and China trade. I left following the sea in 1852. I have only been at sea since as a passenger; I have made three passages to Melbourne and back. I joined the ship at Gravesend; she behaved very well till we got to Plymouth; there was a cross sea. At five minutes past twelve midnight, of Friday, the 5th January, we left Plymouth; it was a beautiful night. On Saturday afternoon the wind began to freshen; she was then on the starboard tack, to the best of my belief. On Sunday the wind still freshened, and it was raining. Nothing occurred worthy of notice till Monday evening between six and eight o'clock, she shipped water pretty freely, and continued all night to do so; I simply speak to the main hatch; she took in water at the hatch. I sat up all night; the ship was by the stern, and the water ran aft; there was no very great quantity, just enough to make one uncomfortable; this continued till Tuesday morning. At 9 o'clock I heard the cry that the jibboom had been carried away close to the cap; I went on deck, to look, and saw the fore royal mast swinging about to and fro; I had not stood long before the top gallant mast, fore, went, and directly afterwards the fore top-mast, under the top-sail tie. This wreck swung about; the men went aloft and secured it as well as they could. The jibboom was not touched that day. The decks were not clear of water, there was more or less water all that day. On that day, I think it was, I saw some coals, a great quantity, rolling about tremendously; coals out of the bags, and some large pieces that had never been in bags. It was blowing very heavily on Tuesday night, with a very heavy sea, and shipping a good deal of water. I think some time, day or night, the yards were hauled round. I think I noticed on Wednesday morning that she was on the port tack. The spanker was blown away on the Tuesday night. On Wednesday the day was better up to noon; the wind had lulled a little. On that day the men began to clear away the wreck of the jibboom, to get it in; it took them nearly all day, till very near dark before they got it in. It was lashed to the fore rigging, one end placed on the house, the other end over the bulwarks. The flying jibboom was got in about 2 o'clock; it was then lashed near the funnel, aft. It must have been lashed; it was in front of the saloon, past the engine-room hatch; it was not adrift then; the ship was rolling at the time, and therefore I think it must have been lashed. From that time till 9 at night, I did not take any particular notice of the flying jibboom. At 9 o'clock, as I was going along the deck from the poop on the port side, this flying jibboom was rolling and striking the bulwarks, and then against the combings of the engine-room hatch; it was totally adrift then, and I was afraid to pass it, and I made my way back to the poop again; every one was engaged; I did not speak to any of the officers or anybody about it; I considered it was dangerous to persons passing, as well that it might do other damage. I returned back to the poop and remained there an hour; I then went down the saloon, remained there about an hour, and while standing, talking to a person about 11 o'clock, near the engine-room on the lower deck, an immense body of water came down, and I saw the engineers and stokers rushing up out of the engine-room. The water made a great noise, but I could not see whether it came through the hatch. I then heard that the engine hatch was gone. Mr. Greenhill and Captain Martin came and looked, consulted together, and then went on deck, and the order was issued to get sails out of the locker. I went and assisted to get the sails; we had a long way to fetch them. I assisted, and we carried one sail to the hatch, and found there was a spar and several things that the men had stuffing in the engine-room hatch. I saw the skylight at that time off on the starboard side washing about. I saw no attempt made to put the skylight on; it might have been done before I got to the hatch, as, at least 20 minutes had elapsed; all the sails that the men could get in the ship were tumbled in through the hatchway; then a sail was got, and spread over all; the bulk was above the combings, and we nailed the sails to the deck. My own impression at the time was, that what they were doing was of no good, owing to the great quantity of water that was on deck; there were

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were no battens on it; it prevented a great deal of water going down, but not effectually. I believe that I saw Mr. Greenhill on the Wednesday afternoon, putting something over the engine-room hatchway, he was making ready for bad weather. I don't think there was anything, any covering, over the engine-room hatch on the Wednesday morning, but I am not positive. Throughout the night of Wednesday I saw a gang of men passing buckets of water from the lower saloon. At 10 o'clock on the night of Wednesday, before the skylight was carried away, I saw the stewards baling water from the lower saloon, and putting it into the water-closets. After having worked at securing the hatch, I went into the saloon; I had something to drink, and then went to the pumps, taking a spell occasionally; I then went into the saloon again, and assisted for half an hour in passing buckets of water; I then returned to the deck again, and assisted at the pumps; I then went into the ship's fore-castle for volunteers. I heard there were 21 of the crew below hurt or sick; I begged of two sailors to come out to help pump the ship, and two men came and assisted; the others did not come out to assist. It was getting daybreak, and the donkey-engine fireman had got his fires alight, trying the best he could; I think the fires of the donkey-engine had been washed out the day before. He got up steam, being then daylight, and that relieved the men at the pumps. The weather at this time was frightful, the sea making a clean breach over the deck. The wind was very strong, but not so strong as it was at 11 o'clock on the Wednesday night, when the main topsail was carried away. She was hove to; on the Thursday morning she had half the main topsail set, the other half had been blown away, and the mizen stay-sail was set; that was all the sails she had set at daylight on the Thursday morning, and she was on the port tack. The half of the main topsail held on, and the ship went down with it still set. Between 9 and 10 o'clock that morning, I came on deck again, and heard Captain Martin give directions to Mr. Harris to have the sails on the engine-room hatchway better secured. At that time I still saw the skylight lying on the starboard side of the ship; it seemed more twisted, and was hanging about; it was then too late to make use of it, to stop up the hatchway. Myself, Mr. Greenhill, Mr. Harris, and two seamen worked again, to secure the coverings of the hatchway; the more we tried the less chance seemed of doing good. I found that still a great quantity of water was going down the hatchway. While we were so employed in attempting to secure the hatch, I heard Captain Martin sing out to Mr. Harris to "lower the boats," pointing, as I understood, to the two iron boats; Harris said, addressing Greenhill, "The old man wants the boats down, what am I to do." Nobody went to the boats at that time. The general impression then was, that all hope was gone. Shortly afterwards I heard two of the sailors talking about lowering the starboard iron boat. I said I would lend a hand. Smith, Daniels, King, and myself got in. In lowering her, the after tackle hung, and she went down; I escaped with the others on board the ship again, and walked about the poop and went below again; I heard no fresh orders given after that. I came on deck again and saw some men and the engineer sitting in the cutter, which was hanging to the davits; they came on board again, and Shields went to the helm and wore the ship. Shields and King went to Captain Martin; I heard them say "She is paying off, we'll square the main yard and run her before the wind;" Harris sung out, "Square the main yard and loose the foresail;" that was done, and she payed round, came round by the lee; then I heard the men sing out? "Lower away, this is the time." Previous to this I heard King say, "Captain Martin, will you come with us?" I did not hear the reply; he made a gesture, which I understood to be that he declined coming; I then heard King ask him "what course it was to the nearest land." Captain Martin gave a course; that was the time they cried "Lower away." Seeing two friends of my own in the boat, I jumped in, and she was not alongside two seconds afterwards, and the ship then went down.

By Mr. *Traill*.—The position of the ship was only put up two days, Sunday and Monday. I never heard any of the officers say what the position of the ship was, after that time.

By Captain *Harris*.—While in the boat I think we went about S., dead before the wind.

By Mr. *O'Dowd*.—I was in the state cabin about half an hour before I left the ship; all the passengers were gathered there, behaving very coolly; Mr. Draper was praying with them; one lady said, "Pray with me;" there was another clergyman also there; all the passengers appeared to be calm and resigned. Before leaving Gravesend, I considered the ship deep, she looked very low in the water for a ship of her size; that occurred to me before I got on board: though I considered her deep, I don't say too deep, it did not create any apprehension in my mind. After we left Plymouth on Tuesday morning, I noticed that she was slow in rising to the sea; I noticed that also on going into Plymouth, she was less lively and buoyant than other ships I have been in; she was then under steam. I have been in the "Great Britain" steamer.

By Captain *Baker*.—When we got into bad weather, it struck me that she made worse weather of it than any ship I had been in before.

John Munro.

The within deposition of the said John Munro, was taken upon oath before me, at the Greenwich Police Court, within the Metropolitan Police District, this 7th day of February 1866.

James Traill, Stipendiary Magistrate.

DAVID GAVIN MAIN, upon his Oath, saith :

7 February 1866.

I AM at present staying at the George Hotel, Aldermanbury. I was a passenger on board the steamship "London," during the last voyage. Before the bad weather began, the hatch that led to the second-class cabin was not secure; it was not, in my opinion, what it should have been, by it letting the water down. The deck was wet before we got to Plymouth; the water came down somehow. On one occasion, before we got to Plymouth, I went into the water-closet, and the water rushed in, spirted up on to deck. On the Sunday afternoon, after leaving Plymouth, water came in; the weather got much worse on Monday night, and the water came through the ventilators and wetted me. On the Tuesday I went on deck, after the masts had been carried away; she pitched her bowsprit under water frequently, after she lost her jibboom. On the Wednesday morning I spoke to Mr. Harris, why he had not cut the jibboom away, and he said if they had done that, the gear might foul the screw and injure the pan. I do not think that the jibboom, by being towed adrift, did any injury to the ship. The top-gallant-mast was left swinging about in a very dangerous manner, and after awhile it was fastened, in a measure; the braces were not tightened, they had too much play; I also spoke to Mr. Harris, the sailing-master, about tightening them, and they were tightened after that. On the Wednesday they got the jibboom on board; I saw the flying jibboom brought in, but did not see what was done by either of them; the fore-hatchway was a saddle hatch, the others the same, and in attempting to get down, you would have to raise it, and should a sea come while going down, the water would go into the cabin; and in the event of the hatch being battened down, there was a great difficulty in getting on deck, having to go on hands and knees over a quantity of baggage, and in the event of the hatches being securely fastened down there would not be sufficient ventilation. The covering of the hatch leading to the second cabins came down to the combings on deck; it rested on the combings. I noticed the hatchway of the engine-room, and I considered the combings were too low; they were not so high as I have seen in other vessels. On Wednesday night, about 12 o'clock, I came on deck, when the sailors were getting sails up; water was being baled out, and I went into my cabin and slept, having given up all hopes of seeing land again; I felt quite prepared, I was so exhausted; at half-past two o'clock Mr. Munro came and called me up; said the ship was going down. I said "I did not expect she would go down for a day or two." I got up and went to the pumps again; the ship was then like a log on the water; she was just like a rock, sea washing over her. I was speaking to Captain Martin a few minutes before I left in the boat. I heard King say to Captain Martin, "If we succeed in getting away in the boat, what course shall we steer?" he replied, "E.N.E." I heard Captain Martin ask a young girl if she would like to go in the boat, before she was lowered, she said "Yes," and Captain Martin said, "you can go in that;" and when the boat was lowered, Mr. Monro went to look for her, but could not find her, and feeling the ship sinking from under my feet, and water come shooting out from deck in front of the poop; it was the colour of ale, a rusty colour, and I jumped into the boat. I think all the passengers in the saloon at that time were drowned. My belief is that at the time the "London" went down, her hull and her lower masts were as good as the day she was launched.

D. G. Main.

The within deposition of the said David Gavin Main was taken upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 7th day of February 1866.

James Traill, Stipendiary Magistrate.

Greenwich Police Court, 12th February 1866.

JAMES JOHNSON, upon his Oath, saith :

I LIVE at No. 25, Biston-place, Poplar. I am draughtsman to Messrs. Wigram and Sons. 12 February 1866. I have been so employed 23 years; I made drawings of the auxiliary screw steam-ship "London," which drawings I produce; I made the necessary calculations, and the scale of displacement, which I also produce; from those calculations I can say what the weight of the ship was when she left the East India Docks, after her cargo was in, to go to sea; the calculation includes the cargo. The weight of hull, masts, rigging, anchors and chains, water-tanks, kentilege (200 tons), and 45 tons of coals, and engines and boilers, without water, amounted in weight to 2,020 tons; the water in the boilers about 40 tons; the boats 10 tons; sails 4 tons; watering tanks 78 tons; provisions 55 tons; stores 20 tons; passengers, officers, men and effects, including baggage, 24 tons; coals 473 tons; cargo, dead weight, 345 tons; measurement—goods, 950 tons; taken at 100 tons measurement to 35 tons weight, would leave about 341 tons. Net total weight being about 3,410 tons.

By Captain Harris.—With that loading the scale gave 20 ft. 3 in. her mean draught; and when she left the docks, on her last voyage, the mean draught was precisely 20 ft. 3 in. I calculated the weights by the scale of displacement. The bunkers were constructed

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to hold about 500 tons of coals. The height of the combings of the fore hatch of the "London" was 12 inches; that is shown by the original drawings; the combings of the main hatch, and the one at the break of the poop, were 12 inches also; the combings of the engine-room hatch I cannot speak to, they are not on the drawings. I should say the height of combings would be about 11 inches, and the frame of the skylight about 7 inches. The fore and main hatch combings were of iron, those of the engine-room hatch of wood; on looking at the drawing now produced, I can say that the combings of the engine-room hatch were 11 inches from the deck to the rabbet; the height of the spirketting up to the covering board is 16 inches; taking the round of the beam it would make the top of the combings 4 inches above the covering-board. The water ports came down to the covering-board. Ten inches is considered to be a good height for a combing in a wooden ship, a sailing ship; I consider that a good combing. I won't be sure about the combings of the after-hatch. The cant at the entrance of the upper saloon was 12 inches by 5, not moveable, bolted to the deck; 12 inches in height by 5 inches thick. According to the drawing produced, if the scuppers were blocked up, 16 inches of water would stand in the water-way before it could get out. The length of the ship was 268 feet, and there was a 3 ft. 6 in. shear for midships forward; aft it would be 2 feet. The calculated deep load line was 20 to 21 feet, the mean deep load line 20 ft. 6 in. amidships.

By Captain *Baker*.—I have draughted a great number of steam-ships, and the combings of the hatches are not higher than I have described, 10 or 11 inches. I don't see any objection to having them higher. The fixed height of the engine-room hatch combings was 11 inches from the deck, and thickness 5 inches, and of teak wood. The bulwarks of the "London" were of iron, 3 ft. 3 in. for the covering-board, the water ports were 2 ft. 6 in. from the covering board. From the deck to the rail the height is 4 ft. 9 in., to the under part of the rail, which was 3 inches in thickness, making the height 5 feet.

J. Johnson.

The within deposition of the said James Johnson was taken upon oath before me, at the Greenwich Police Court, within the Metropolitan Police District, this 12th day of February 1866.

James Traill, Stipendiary Magistrate.

THOMAS WILLIAM CLOUGH, upon his Oath, saith:

I RESIDE at Huddersfield, Yorkshire;—solicitor. I had a son on board the "London" as midshipman; he had had a trial before on board a schooner from Hull. I was on board the "London," in the East India Docks, on the day before she sailed on the last voyage. I was also on board the day she sailed, about half-past nine in the morning. On the day before, Wednesday (27th December), I got on board by means of a ladder up to the side of the ship; I had to ascend 4 or 5 feet from the dock to the deck of the ship; on that afternoon I was on board two or three times, and towards evening the ship was not so high out of the water; it had lowered about a foot; from what had been taken on board. Whilst I was on board on the Wednesday, I heard either the first or second officer address Captain Martin in reference to some goods that had been brought down to be put on board; there were a great many packages lying alongside, and it had reference to one of those packages; the mate said that one of those packages ought to go; the captain replied, "Tell them we cannot do with it." The mate remarked, "It's marked samples, and we generally take samples." Captain Martin repeated the order, "We cannot do with it." I did not understand whether it had reference to weight or measurement, or what; that was near five o'clock on Wednesday evening. On Thursday, the 28th December, I was on board again, about half-past eight in the morning; she was inside the gates of the lock then. As soon as I found her in motion I got off, and watched her come through the lock. On that morning I had no difficulty in stepping from the edge of the dock on to the ship's deck. As far as I can recollect the gangway was dead level with the dock. I cannot tell how deep the water was from the top of the docks.

By Mr. *Traill*.—I cannot say whether the package that I have mentioned was taken or not.

T. W. Clough.

The within deposition of the said Thomas William Clough was taken upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 12th day of February 1866.

James Traill, Stipendiary Magistrate.

WILLIAM BURR BASKCOMB, upon his Oath, saith:

I LIVE at No. 39, Ashburnham-grove, Greenwich. I am Admiralty overseer of ships building under contract for Her Majesty's Government. I hold the rank of foreman of the Yard at Devonport. I have been 11 years employed by the Government in superintending the building of vessels built by private firms under Government contracts. I have superintended

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tended the building of both iron and wooden vessels. I superintended the building of the "Warrior" and "Northumberland" iron-cased ships. I am directed to attend here to-day by the Comptroller of the Navy. On looking at the ship's register now put into my hand, containing a description of the build of the ship "London," I think the ship is well proportioned; I think so, as she is like the screw-ship "Adventure," a troop-ship in Her Majesty's service; and that ship I have always heard spoken of at the Admiralty as a good sea-going ship. Having heard the evidence read of the witness Mr. Wawn, I consider that the arrangement and description of the materials, and the manner they were put together, were correct. On looking at the drawings (now shown to the Witness) of the section of the ship "London," I consider her to have been of very good construction. Now, with reference to the engine-room skylight, on looking at the tracing produced, I should not consider it unsafe; I have seen such in merchant ships. In the iron-cased ships in Her Majesty's service that we are building now, I have combings 15 inches above the deck; the reason for that is, that iron-cased ships are more liable to take in water than other ships. The height of the combings on the upper deck of a gun-vessel are not more than 10 inches from the upper side of the deck; the hatch has also a covering similar to the "London," but they are secured in various ways; they are made portable, and not so ponderous as the skylight of the "London" seems to be; they are made in sections, fitted into an inch-and-a-half rabbet. In our vessels we should put this skylight on in three sections, secured in the same manner as this. We should secure them to the combings just as this, the hinged metal flap which fastens the skylight to the combing being fixed outside with a thumb-screw. The only advantage that our system has over the present is, that we have an iron grating on the top of the combings under the skylight. The beams of the "London," I perceive from the drawings, run through at the engine-room hatchway, which is a great improvement in merchant ships, and is adopted in Her Majesty's service. I should have considered that this skylight was sufficient; but, as an Admiralty overseer, I should not like to have passed it without the iron grating, or deadlights, fitted to the upper part of the combings; that would be because it is our rule. From this sketch of the skylight of the "London," it seems to me to be a very good job; had I have seen it before the ship went to sea, I should not have anticipated an accident similar to that that has taken place. As to battening down skylights, it is the usual practice in the merchant service. I should have considered this skylight secure from the sea in bad weather, if covered with tarpauling, and battened down to the combings. As a precaution, I consider either a grating or deadlights necessary in order to protect the engine-room, in the event of the skylight being carried away; that applies to all openings on the deck. The scuppers on the drawing of the "London" seem to be a good arrangement. If they were relieved, they, together with the water-ports, would be sufficient to discharge freely the water that could come into the ship. Looking at the model of the ship now before me, with her load-line, and the height of the spirketting, I consider that the height of the combings was sufficient with reference to her means of discharge of water by the scuppers and flap-boards.

By Captain *Harris*.—In a ship-of-war, iron gratings are fitted on to the combings in order to protect the hatch in the event of the skylight being blown or washed away. These gratings must be regulated by the throw of the engines. I should not consider the rabbets sufficient without clamps; if those clamps or metal flaps had been neglected to be fastened, an accident such as that which happened to the skylight of the "London" was very likely to happen.

By Mr. *Traill*.—In the section of the stern-lights produced, I see nothing to object to; it is the ordinary mode, and I have frequently seen it adopted in the service; but I should recommend that the deadlights should be fitted in a rabbet from the outside, hinged in two halves, like a half port. This plan is a very general one, both in the Government and merchant service.

By Captain *Baker*.—I never before heard of a skylight being washed away. I consider that it would be advisable to protect engine-room hatchways with an iron grating, or shutters fixed to the combings: in that case we should provide cowls on the deck for ventilation. I would recommend that all hatchway openings on deck should be provided with similar gratings or shutters.

By Captain *Harris*.—Looking at the drawing of the upper deck of the "London" produced, I perceive there is a deck-house, which I was not aware of when I answered the question with regard to the height of the combings; seeing there was not so much space for the water to flow on deck, I should say that the engine-room combings should have been 15 inches in height; that would also affect the question of height of the after hatchway combings in a similar manner. On looking at the sketch of the booby-hatch produced, leading to the second class saloon, that is the kind of hatch usually used in the merchant service. The ventilation in the "London" was fitted according to the usual plan.

W. B. Baskcomb.

The within Deposition of the said William Burr Baskcomb was taken, upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 12th day of February 1866.

James Traill, Stipendiary Magistrate.

13 February 1866.

Greenwich Police Court, 13 February 1866.

The said THOMAS WILLIAM WAWN, upon his Oath, further saith :

In my evidence given on the 30th of January last, I stated that I never saw a vessel better fitted than the "London," except those intended to have additional protection by being expected to be overladen, or to be used as blockade runners, and to have water continually on deck: I spoke that with reference to the coverings of the hatchways of the "London." I consider that the covering over the hatch of the "London," with a tarpauling over it, would have been a sufficient protection under all ordinary circumstances against the inclemency of the weather. When I certified this vessel, I examined the hatchway of the engine-room carefully, and was as much satisfied with it as with the other parts of the vessel. I took notice of the combings of the other hatches generally and considered them sufficient, not insufficiently high, and in full accordance with the rules laid down by Lloyd's Association. I examined the stern-ports of the "London," while the man was fixing them, before her first voyage; I was only compelled to make five surveys of the "London," according to rule, while building, and I made 20; that was because I had other ships to survey in the yard. I paid attention to the fixing of the stern-ports; the men were fixing pieces of teak wood to the plating of the stern for the deadlights to slide in: the teak timber was bolted to the outside plating, and appeared to be sufficient for the purpose; there was a Venetian between the glass and the deadlight. I agree with the evidence of Mr. Bascomb given yesterday, that the deadlights of the stern-ports would be stronger if fitted from the outside, rabbeted on an iron frame, and hinged in two halves; that might be made secure enough to prevent being carried away by an ordinary sea. I was so satisfied with the ship "London" generally, that I made application to Mr. Wigram to permit my son to go out with her as third engineer; Captain Martin, however, had made a prior promise to another person, and he did not go.

By Captain Harris.—I have no objection whatever to the high spirketting that the "London" had on the ends of her deck beams. It is the usual mode of building large merchant ships, and likewise wooden vessels in the Navy. Where the spirketting is so high, I would make the combings of the hatches a little higher; but I don't see that it is a matter of necessity. I see no objection to the combings being made higher. I would make the combings of iron, of the same thickness as the bulk-heads, and at the same time I would make them a little higher. The "London" was not, in my opinion, at all extravagant in length to beam. She was $7\frac{1}{2}$ times her width in length. I would recommend that the combings of all skylight hatchways should be made a little higher. The cant in front of the poop was a foot high, and a fixture.

Thos. Wm. Wawn.

The within Deposition of the said Thomas William Wawn was taken upon oath before me, at the Greenwich Police Court, within the Metropolitan Police District, this 13th day of February 1866.

James Traill, Stipendiary Magistrate.

The said GEORGE BARBER (Shipwright Surveyor to the Board of Trade), upon his Oath, further saith:

I ATTEND here to-day to be further examined at the request of the Board of Trade. I have heard the dimensions of the ship "London" mentioned, also as they appear in the certificate of registry. I have compared those dimensions with the dimensions of several able transatlantic steam ships that I have surveyed at Liverpool and in the Clyde, and I find the comparison favourable to the "London." I have taken the dimensions of 20 vessels, the mean length is 8 times the breadth, and the length 12 to 14 times the depth. In the case of the "London," the proportion of length to breadth was as 7.45 to 1, and the proportion of depth to length rather more than 11 times. They were all screw-steamers, but not masted in the same way, none of them, as the London. Taking two vessels of the same proportions, the balance would be in favour of the one that had iron lower masts, and iron or steel lower and top-sail yards. I have made a comparison also of the form of the "London," looking at the tonnage under the tonnage deck in connection with the principal dimensions, and she is not what I would describe as a sharp ship, her tonnage being about seven-tenths of the tonnage of a parallel peppedon under the same dimensions. The spread of canvas is governed by the breadth of the ship. I have the dimensions of the masts of the ship "London" before me, and I do not consider that she was overmasted. I have heard read Mr. Wawn's evidence of the construction of the "London." I consider her to have been of excellent construction. If I had constructed her, I should have placed her deep load-line amidships at 21 feet. She could, in my opinion, have been laden to that with safety. As surveyor to the Board of Trade, I passed a vessel the other day which had a box spirketting; it was on the spar deck, and 12 inches in height; that was the only vessel that has come under my observation with a box spirketting on the weather deck. I object to box spirketting of the depth of the "London" upon the weather deck, as it prevents the escape of deck water. The advantage gained in point of strength is lost in another way. I prefer the gutter water-way myself.

By

INQUIRY INTO THE LOSS OF THE STEAM SHIP "LONDON." 35

By Captain *Harris*.—The Holyhead mail packets have a gutter water-way, and I think that gutter water-ways are best for ocean-going steamers, as the scuppers and water-ports lead directly out of them. I think, with Mr. Baskcomb, that strong iron gratings, or deadlights, is a desirable arrangement for the protection of engine-room hatchways; but I think the arrangement described in my former evidence is preferable, and might be carried out without difficulty. I produce a sketch of the arrangement that I have described of an iron deck-house in four ships, the "Arabian," "Egyptian," "Dalmatian," and "Persian," which trade between Liverpool and the Mediterranean. I have heard the engine-room skylight of the "London" described, and how it was constructed (*a sketch of the skylight was here handed to the Witness*). If that skylight had been properly secured by its fastenings, and battened down, I am at a loss to account for its being dislodged by the sea. I don't think that the engine-room of the "London" could contain sufficient water to cause the vessel to founder.

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George Barber.

The within Deposition of the said George Barber was taken, upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 13th day of February 1866.

James Traill, Stipendiary Magistrate.

Sir DANIEL COOPER, upon his Oath, saith:

I RESIDE in Prince's Gardens, South Kensington. I have been resident in Australia for many years, and was Speaker of the Legislative Assembly there. I have made three voyages to Australia and back. I was a passenger in the steam ship "London" on her first voyage out, in 1864; I occupied the starboard stern cabin. I joined at Plymouth. She left on the 27th of October. She had the appearance to the eye of being deeply laden, but not to excite apprehension. We had very fine weather, and we steamed nearly all through the Bay of Biscay; she was rather sluggish; inclined to pitch a little sharp when there was a lift. I considered her a very heavily rigged ship; her yards were of great width. Captain Martin always carried a full press of sail, and that was why I went with him, not being nervous. Considering her consumption of coals, she steamed farther than I could have supposed. By "sluggish," I mean that she did not rise to the sea. She was not slow as a steamer, considering her power, but she was slow as a sailing ship before the wind. She did not steer well when under sail, or even under steam. The men had a difficulty in keeping the wheel steady. She always drifted to windward, whether the screw was up or down. I should call her a "dry ship," for she took very little spray on board. When she took in water it was always green seas. The day after we left the north east trades, she made two very heavy pitches, and one man was washed overboard. I did not like her behaviour, and although I had every confidence in Captain Martin, I would never have gone to sea in her again. I believe that Captain Martin was a thorough sailor as far as sailing ships are concerned, so also was Mr. Harris the first officer. Captain Martin has had no experience in steam ships, and he had to find out her faults, and to depend upon his engineers. My impression is, that the engine-room skylight was floated off by the quantity of water. I don't consider that the stern-ports were constructed to resist a strong body of water; that struck me at the time, but I did not trouble Captain Martin about it; there was a head that went across the top of the window, to divide it from the shutter. I consider that the "London" was fit to carry cargo, but not heavy cargo to an extent. With her fine lines and heavy canvas, I don't think she ought to have carried a cargo to make her float deep. My opinion is, that the combings altogether in the "London" were too low, and the same in many other ships. In foreign ships I have seen the combings much higher; I found while off the Cape of Good Hope, that the screw dragged and strained the ship very much. My feeling is much in favour of Captain Martin and Mr. Harris; from what I saw of them they were first-rate men.

Daniel Cooper.

The within Deposition of the said Daniel Cooper was taken, upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 13th day of February 1866.

James Traill, Stipendiary Magistrate.

WILLIAM COWLEY MILLER, upon his Oath, saith:

I AM a Ship builder at Liverpool. I have heard the dimensions of the "London" from the certificate of registry; I consider the "London" a fair proportioned ship as to length, depth, and breadth. I have built a sailing vessel six times and a-half length of her beam; I have launched three iron ships this year, in excess of six times their beam. Looking at her model, I consider her rather a full ship than sharp, for a steamer. I have heard the evidence of Mr. Wawn as to her construction; and I think that all vessels built according to the highest class of Lloyd's rules must be faithful built vessels both as regards labour and material; Lloyd's rules require the best iron to be used. In building such a ship as the

13 February 1866. the "London," I should have fixed her deep load-line at 21 feet, which would leave 5 feet 3 inches free board. I have heard the evidence of Mr. Barber given to-day, with reference to the spirketting of the "London;" I have a decided objection to a spirketting, I would not have it at all in iron ships: I never saw a vessel built in Liverpool with spirketting: in the first place my objection is that it increases the difficulty of carrying the water off her decks; my objection is not confined to the height of that spirketting, but to it altogether. With reference to the protection of the engine-room hatchway of the "London," I have come to the conclusion that the skylight could not have been properly fastened or secured to keep it down: looking at the height of the spirketting of the "London," I consider that the combings of the hatches fore and aft were too low. The skylight itself appears to be constructed in the usual manner, but I am of opinion that engine-room skylights generally are not sufficiently protected. Had I been called upon to survey the hatchway of the "London," I should have found fault with the fastening of the skylight, and I should have preferred the fore and aft frame-work to have been a foot deep at least, just double what it was. I have heard the evidence that iron gratings should be introduced under the skylight; I cannot for the life of me see any advantage or utility in it; the principal thing is to secure the skylight; I am clearly of opinion that the spirketting round the "London" was one of the causes of her foundering. I verily believe that if the "London" had had gutter water-ways and a sufficient number of water-ports, she would not have foundered. I see no advantage in having a grating under the skylight; outside the skylight would be better. I served my time, and left 29 years ago, in Devonport Dockyard; I have been on board corvettes there and engaged in building them; I can say that these corvettes had spirkettings of various heights from the deck, according to the sort of gun they carried: the only means of carrying away the water were scuppers and ports. There were three water-ports I made on board the "Oreto," 8 or 9 ft. in length, and width 8 or 9 in.; I do not know the practice of building frigates and corvettes of 1,700 tons of the present day.

By Mr. Traill.—In cases of wooden vessels shipping heavy seas, they would carry away the bulwarks, and so free the ship from water; but in iron ships, the sides being so strong, they require a greater number of outlets for the water she may ship.

W. C. Miller.

The within Deposition of the said William Cowley Miller was taken, upon oath, before me, at the Police Court aforesaid, this 13th day of February 1866.

James Traill, Stipendiary Magistrate.

THOMAS WILSON, of Spital, Cheshire, upon his Oath, saith:

I was formerly a shipbuilder at Liverpool; I have retired for the last 10 years. For many years previously I was engaged extensively in building iron and wooden vessels. I have heard the evidence respecting the proportions of the ship "London"; and I differ with all classes of sea-going ships that have been built during the last 10 years; during that time there has been a great increase in length in proportion to beam. I disapprove of the new system. I saw the ship "London" last May in the dry dock at Blackwall; my reason for going to see her was, that my son was going to Australia; a friend had recommended him to take a berth in her; and I came from Cheshire to see her. I went into the dock, and examined her bottom fore and aft; she appeared to be an unusually strong iron vessel, quite equal to anything of her class that I had previously seen. My objection to her was, that her length and depth were too great for her beam; and I came to the conclusion, that unless great judgment was used in loading her, she would be a very dangerous one at sea; that conclusion applied to her class, not with reference to herself. I also thought her overmasted. I did not go on board the ship; these being my objections, I did not allow my son to go with her; I would not allow him to go in any ship of her class. In my opinion, you cannot load a long ship safely, as you can a short ship. The quantity of iron mentioned in the evidence of the witness Cole, to be 345 tons stowed in a space of 56 feet in length by 24 feet in breadth, and 5 feet deep; by my calculation that iron must have been stowed nearly solid; some vessels require a deal of dead weight, but in a steamer the weight of her engines, water, and coals ought to be sufficient, or nearly sufficient. I have heard the evidence given here to-day as to the protection of engine-room hatchways. The usual practice or mode of protecting engine-room hatchways is iron bars on the edge of the combings, and fixed and bolted through the main combings. I have very seldom seen a skylight; in bad weather the bars would be covered with a tarpaulin; that is the means of protecting an ordinary crank hatch, and the same could be made applicable to such a hatchway as the "London." I have heard of an engine-room skylight being washed away before; my opinion is that the skylight of the "London" could not have been properly secured. I am of opinion that no coals should be allowed to be stowed on the deck of any sea-going steamer.

By

By Mr. *Traill*.—I have heard the evidence that a spar was seen flying about and striking the combings of the hatchway; that might have started the skylight; and the sea probably would do the rest. 13 February 1866.

Thos. Wilson.

The within Deposition of the said Thomas Wilson was taken upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 13th day of February 1866.

James Traill, Stipendiary Magistrate.

Greenwich Police Court, 14 February 1866.

The said BENJAMIN SHEALS, upon his Oath, further saith as follows:

I CANNOT say which way the wind blew; but the ship's head, I know, headed the wind all the time. On the Tuesday night the ship was on the starboard tack. She was put round on the port tack on Tuesday night. She was always head to wind while I was on deck. I never heard any one say that she had been put round to go with the wind. It was during the middle watch on Tuesday night that she was steamed round, or early on Wednesday morning; up to that time she had been on the starboard tack. I am sure that I saw the engine-room skylight lying on the starboard side of the ship, on the Thursday morning, broken all to pieces. It was about 9 or 10 o'clock. 14 February 1866.

The mark of + *Benjamin Sheals*,

The within Deposition of the said Benjamin Sheals was taken upon oath, before me, at the Greenwich Police Court within the Metropolitan Police District, this 14th day of February 1866.

James Trail, Stipendiary Magistrate.

The said THOMAS WILSON, upon his Oath, further saith:

FROM the evidence that I have heard that the "London" was drawing 20 feet 3 inches amidships when she left Gravesend, at that draught I am of opinion she was overladen. I am of opinion also that such a ship should have carried storm sails. Stay sails might have been used for that purpose, but she ought to have had storm trysails on board. The sails that the "London" carried were not proper storm sails, not adapted for a storm, or to be used as storm sails. I consider the main cause of the ship's foundering was her being overladen, in consequence of which she could not rise to the sea, and consequently the seas came over the ship. Looking at the section of the "London" produced, I think that her load line is too high up by 18 inches; that would give her load line 18 feet 9 nine inches. I do not agree with the opinion of Lloyd's surveyor, or with any of the gentlemen that have been examined, as to her proportions or as to her lading; for I believe that they agree that she was not too heavily laden.

By Captain *Baker*.—I consider her too long and too deep for her beam. I am of opinion that six times the length of beam for iron sea-going ships is quite sufficient, though she is not an exception, but the rule of late years.

Thos. Wilson.

The within Deposition of the said Thomas Wilson was taken upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 14th day of February 1866.

James Traill, Stipendiary Magistrate.

The said WILLIAM DANIELS, upon his Oath, further saith:

I REMEMBER going with Greenhill to make a protest about the loss of the "London." I don't know whether any observations were made on the Wednesday (10th January). The weather was dull, with hail storm. I don't remember what the position of the ship was on the Wednesday. When she was put on the port tack, she lay easier on that tack, and I thought she was going back to Plymouth; but her head was still to wind, N. N. E.; that was on the Wednesday. At half-past 10 o'clock on the Thursday morning she was put on the starboard tack, and remained on that tack till she went down; and that was the only time she was before the wind; and the reason of putting her on that tack was, to bring

14 February 1866. bring our boats on the lee side. That was the only time she was before the wind, since leaving Plymouth.

By Captain *Harris*.—All hands were on deck at that time she was put round. Some hands were below baling water; I was at the wheel. The half of the main-topsail had been blown away; the other half stood, and went down with the ship: how it stood, I cannot say; it was blowing hard at the time.

The mark + of *William Daniels*.

The within Deposition of the said *William Daniels* was taken upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 14th day of February 1866.

James Traill, Stipendiary Magistrate.

ROBERT GALLOWAY, upon his Oath, saith:

I AM Engineer Surveyor to the Board of Trade. I was in Court yesterday when Mr. Barber was examined, and I heard his evidence; and I quite agree with him in reference to the spirketting and the combings of the "London." I have read the evidence of the engineers, Jones and Greenhill. Adverting to that evidence, it did not appear to me that they adopted the usual course when water was entering the engine-room. I think they should have changed the suction of the centrifugal pump; if that could have been done, a great quantity of the water could have been got rid of before the fires were put out; but, upon looking at the drawings of the engines produced, I am not in a position to say whether the engineer could have done so. It is the engineer's duty to see that the engine-room skylight is properly secured. Assuming that the skylight of the "London" was properly secured, I cannot account for the displacement of the skylight. It appears to be a substantial skylight. I have heard the evidence given by Mr. Barber, as to securing engine-room hatches by extending the poop further forward, and I agree with that opinion. I know that that suggestion has been adopted in vessels of 1,200 or 1,400 tons. I never heard of an engine-room skylight being carried away before; I think this must have been an accidental circumstance. In bad weather the engineer should be in readiness, with all means at his disposal, to relieve the bilge from water.

By Mr. *Traill*.—What I have said with regard to changing the suction of the centrifugal pump, is upon the presumption that the water did not come in so rapidly and largely as to prevent the engineer from doing so.

By Captain *Baker*.—If the fires had been put out in three minutes, as Greenhill has stated, then his changing the suction would have been of no avail.

R. Galloway.

The within Deposition of the said *Robert Galloway* was taken upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 14th day of February 1866.

James Traill, Stipendiary Magistrate.

RIOU GEORGE BENSON, Clerk in Holy Orders, sworn, of Hope Bondle Rectory, Shropshire:

ON the 5th of January last, I went to see a younger brother of mine off in the ship "London"; she was then lying just within the breakwater; I took him on board; it struck me that she seemed very low in the water for a ship that had been advertised to convey passengers. A Mr. Youngman, who was lame, was in the boat with us; there was no sea at all: the ladder was reversed and it was with difficulty we got on board, and that was a confirmation that she was heavily laden; I wrote home to my father after I had left my brother, stating that I considered the ship was heavily laden; I noticed a great deal of coal on deck; and her decks were very wet.

Riou G. Benson.

The within Deposition of the said *Riou George Benson* was taken upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 14th day of February 1866.

James Traill, Stipendiary Magistrate.

ROBERT ROE, upon his Oath, saith :

I RESIDE at Lynmouth, Devonshire ; I am a magistrate of the county of Devon, and was formerly a merchant captain ; I served with the late Captain Martin in 1840 ; I was third officer of the ship " Maidstone " belonging to Messrs. Wigram ; Captain Martin was then fourth officer ; the voyage was from London to Calcutta, and thence to London. In 1841, we made the same voyage, myself as second officer, and Captain Martin as third officer. In 1842, we made the same voyage both in the same capacity. In 1843, we made the same voyage. In 1844, I was chief officer of the " Maidstone," and Captain Martin, second officer. In 1845 and 1846, we made the same voyages in the same capacity. While we were together as officers he was exceedingly attentive to his duty, and a good sailor and officer ; he was a skilful and attentive man in his duty ; and a very fit and proper person to take charge of a ship.

14 February 1866.

Robert Roe.

The within Deposition of the said Robert Roe was taken upon oath, before me, at the Greenwich Police Court, within the Metropolitan Police District, this 14th day of February 1866.

James Traill, Stipendiary Magistrate.

LIST of Passengers per Steam Ship "London."

First Class.

The Rev. Mr. and Mrs. Draper.
Mrs. Owen and Child.
Mr. and Mrs. G. F. P. Urquhart.
Mr. J. Patrick.
Mr. and Miss Vaughan.
Mr. J. Alderson.
Mr. P. Benson.
Mr. and Mrs. J. Fenton, and two children.
Mr. G. M. Smith.
Mr. and Mrs. Chapman, and two children.
Mr. and Mrs. Clark, and son.
Mr. F. Lewis.
Mr. and Mrs. J. Bevan.
Dr. J. Woolley.
Mr. and Mrs. Debenham.
Miss L. Maunder.
Mr. J. Robertson.
Mr. T. M. Tennant.
Mrs. Traill and child.
Mr. G. Palmer.
Mr. T. Brown.
Mr. and Mrs. Amos.
Mr. E. Brooks.
Mr. J. R. Richardson.
Rev. Mr. and Mrs. Kerr.
Mrs. and Miss King.
Mr. and Mrs. Thomas, and two children.
Mr. A. Sandilands.
Mr. E. Youngman.
Mr. H. J. Dennis.
Mr. E. A. Marks.
Mr. D. F. De Pass.
Mr. W. D. Burrell.
Dr. J. Hunter.
Miss Dovey.
Miss C. McLachlan.
Miss Cutting.
Mr. McMillan.

Second Class.

Mr. Kaye Eastwood.
Mr. F. Stone.
Mr. and Mrs. White.
Miss H. Price.
Mr. J. L. Williams.
Mr. and Mrs. Graham.
Mr. B. G. Powell.
Mr. J. E. Wilson (saved).
Miss H. Morling.
Miss G. Graham.
Mr. J. Dothie.
Mr. C. Gough.
Mr. A. Bruce.
Mr. J. Woodhouse.
Mr. G. Cross.
Mr. W. Day.
Mr. D. W. Lemon.
Mr. J. and Mrs. Giffell.
Mr. G. Chennells.
Mr. and Mrs. Wood.
Mr. and Mrs. Clayson.
Mr. Thomas Wood.
Mr. Godfrey Wood.
Miss E. Wood.
Mr. B. Bevan.
Miss S. Brooke.
Mr. Davies.
Mr. T. O'Hagen.
Mr. H. W. Harding.
Mr. F. Fryer.
Mr. J. Munro (saved).
Mr. D. C. Main (saved).
Mr. C. Johnstone.
Mr. P. Fenwick.
Misses Ellen and Mary Anne Meggs.
Mr. G. H. Campbell.
Miss E. Marks.
Mr. E. G. Trevenan.
Mr. and Mrs. Hickman, two sons and two daughters.
Mr. A. McLean.
Mr. Davis.

LIST of Passengers per Steam Ship "London"—*continued*.

Third Class.

Mr. W. Passmore.
 Mr. H. Miller.
 Mr. C. P. Chandler.
 Mr. B. Hay.
 Miss E Jones.
 Misses Selina and Alice Simpson.
 Mr. and Mrs. Hanson.
 Mr. and Mrs. Graham and three children.
 Mr. David Graham.
 Mr. McNittie.
 Mr. G. Rolwegan.
 Mr. and Mrs. Sereombe and three children.
 Mr. and Mrs. G. Flick and four children.
 Mr. R. Treverow.
 Mr. D. Block.
 Mr. J. Lerkem.

Messrs. Zulee Morris and Zulee Barnett.
 Mr. S. Bolton.
 Mr. T. Skeggs.
 Mr. and Mrs. D. Smith.
 Mr. A. Humphray.
 — S. Spring.
 Mr. A. Hogeim.
 Mr. J. Walls.
 Mr. W. Barrow.
 Misses Susan, Caroline, and Mary Lampes.
 Mr. Algernon L. Otter.
 Mr. John Little.
 Mr. H. McCovey.
 Mr. F. Batchelor.
 Mr. J. Kirkwood.
 Mr. W. Clifton.
 Mr. R. Reynolds.

LIST of the Crew of the Steam Ship "London," on leaving Plymouth, 5 January 1866.

1. J. B. Martin	-	- Master.	46. Martin Arnold	-	- Able Seaman.
2. Robert Harris	-	- Chief Mate.	47. August De Horner	-	- ditto
3. Arthur W. Ticehurst	-	- Second ditto.	48. Otto Olsen	-	- ditto.
4. Arthur C. Angel	-	- Third ditto.	49. Andrew Wilson	-	- ditto.
5. Henry Grant	-	- Fourth ditto.	50. James Gough	-	- ditto.
6. J. Vivian Faull	-	- Surgeon.	51. Hein Butcher	-	- ditto.
7. Geo. Wm. Bates	-	- Carpenter.	52. Richard Lewis	-	- ditto.
8. Richard Morley	-	- Sailmaker.	53. H. Lagberg	-	- ditto.
9. Frederick S. Hucksteph	-	- Captain's Steward.	54. Andrew Anderson	-	- ditto.
10. Francis Hucksteph	-	- Steward.	55. Henry Jones	-	- Winch driver.
11. Grace Logan	-	- Stewardess.	56. Geo. Care	-	- Assistant ditto and Ordinary Seaman.
12. John Mackenzie	-	- Chief Cuddy Servant.	57. Richard Littlepage	-	- Ordinary Seaman.
13. John Lyell	-	- Second-class Steward.	58. Patrick Short	-	- ditto.
14. William Fowler	-	- Second Cuddy Servant.	59. Wm. Crines	-	- ditto.
15. James Bennett	-	- Third Cuddy Servant.	60. Alfred White	-	- Boy.
16. J. Schlond	-	- Captain's Servant.	61. Edward Logan	-	- Boy.
17. Thomas Ham	-	- Captain's Cook.	62. James Morley	-	- Leading Fireman.
18. Henry Appleton	-	- Passengers' Cook.	63. Henry Jenkins	-	- Storekeeper and Fireman.
19. James Murphy	-	- Ship's Baker.	64. Thomas Purkis	-	- Fireman.
20. Robert Gannon	-	- Butcher.	65. Frederick Hulford	-	- ditto.
21. John Jones	-	- Chief Engineer.	66. Thomas Brown	-	- ditto.
22. John Greenhill	-	- Second Engineer.	67. James Bramble	-	- ditto.
23. John Armour	-	- Third Engineer.	68. George Craycraft	-	- ditto.
24. John Staden	-	- Boatswain.	69. George A. Holmes	-	- ditto.
25. Daniel T. Smith	-	- Boatswain's Mate.	70. Charles Fairbrother	-	- Trimmer.
26. William Hoakings	-	- Able Seaman.	71. George Robson	-	- ditto.
27. Wm. Daniels	-	- ditto.	72. Wm. Clark	-	- ditto.
28. A. Campbell	-	- ditto.	73. John F. Hall	-	- 4th Cuddy Servant.
29. J. Butcher	-	- ditto.	74. Alfred W. Smith	-	- 5th ditto.
30. Robert Merrett	-	- ditto.	75. Morris McKenzie	-	- 6th ditto.
31. John King	-	- ditto.	76. John Fumell	-	- Servant.
32. Joseph Spurgeon	-	- ditto.	77. James Craddock	-	- Sculleryman.
33. Carl Scovell	-	- ditto.	78. William Airth	-	- Assistant 2nd Class Steward.
34. Robert Thompson	-	- ditto.	79. Walter Edwards	-	- Midshipman.
35. Johannes Bernieker	-	- ditto.	80. Robert Wm. Clough	-	- ditto.
36. Julius Matheson	-	- ditto.	81. Edward Thomas	-	- Able Seaman
37. Herman Britsin	-	- ditto.	82. Charles Ansell	-	- ditto
38. Carl Braun	-	- ditto.	83. John Mulloney	-	- ditto
39. John Brown	-	- ditto.	84. Robert G. Stephens	-	- ditto
40. Samuel Brown	-	- ditto.	85. Wm. Hart	-	- Carpenter's Mate
41. Benjamin Shields	-	- ditto.	86. David Jones	-	- Able Seaman
42. Samuel Ellingham	-	- ditto.	87. — Gardner	-	- Assist. Steward
43. Hans Neilson Hanson	-	- ditto.	88. — Hayward	-	- ditto.
44. Edward Quin	-	- ditto.	89. — Matthews	-	- Butcher's Assist.
45. Reuben Trowbridge	-	- ditto.			

Shipped at
Plymouth.

Not on articles,
but working
passage out
by giving
their services.

PORT OF LONDON.

FINAL REPORT OF SURVEY.

Name of the Ship.	Tonnage.	Where and when Built.	Classification, if any.	Where and when last in Dry Dock.	When last Coppered.	Ground Tackle.			Boats,— Dimensions of each.	Nature of Repairs (if any) now effected.
						Hawsers,—Size and Length.	Anchors,— Weight of each.	Chain Cables.		
"London," S. S.	1,428.	Blackwall, 1865.	A. 10 years.	Wigram's Dry Dock, November 1865.	New painted; iron ship.	90 Fathoms - - - 10½ in. 90 " - - - 7 "	1 Anchor - - - of 47½ cwt. 1 Ditto - - - " 47½ " 1 Ditto - - - " 47½ " 1 Stream - - - " 14½ " 1 Kedgce - - - " 7½ " 1 Ditto - - - " 3½ "	300 Fathoms Chain Cable - 1½ in. 90 " Stream " - 1½ "	2 Longboats - - - Length. 26 ft. Breadth. 8 ft. Depth. 3 ft. 6 in. 1 Cutter - - - " 26 " " 7 " " 2 " 8 " 1 " - - - " 26 " " 6 " " 2 " 6 " 2 Lifeboats - - - " 26 " " 7 " " 2 " 8 " 1 Jollyboat - - - " 24 " " 5 " " 2 " 6 "	She was scraped and painted, and part of the upper deck and waterway caulked.

We, the undersigned Surveyors, duly appointed by Her Majesty's Colonial Land and Emigration Commissioners, under and for the purposes of the "Passengers Act, 1849," hereby certify that, in pursuance of directions to that effect received from Captain Lean, R.N., the emigration officer at this Port, we have carefully surveyed the above-mentioned ship, when her hold and between decks were entirely clear of cargo, and have also examined her masts, yards, rigging, sails, pumps, ground tackle, and boats. We find that her hull is sound, tight, staunch, and firm in the fastenings; that her passengers' deck is not less than one inch and a half in thickness, properly supported by beams of adequate strength, forming part of the permanent structure of the ship, and firmly secured with hanging and lodging knees; and that her boats, pumps, and other equipments, are suitable and sufficient for a vessel of her tonnage, and in a sound and efficient condition. And finally we hereby report that the said ship is, in our opinion, sea-worthy, and fit in all respects for the carriage of passengers on her intended voyage to Melbourne.

28 November 1865.

P. J. Reeves, } Government Surveyors for
J. T. Cornish, } the Port of London.

(Approved of)

Jas. S. Lean, R.N.,
Emigration Officer for the Port of London.

CLEARING CERTIFICATE for PASSENGER SHIPS.

Name of Ship.	Registered Tonnage.	Aggregate Number of Superficial Feet in the several Compartments set apart for Passengers other than Cabin Passengers.	Total Number of Statute Adults the Ship can legally carry, exclusive of Master, Crew, and Cabin Passengers.	Intending to Touch at	Bound to	Name of Master.
"London" - -	1,752	1,800	120	Plymouth	Melbourne	J. B. Martin.
CABIN PASSENGERS.				Number of Souls.	Equal to Adults, computed by the Passengers Act.	
ADULTS:						
Married	{ Male, 12 years and upwards	- - -		11		11
	{ Female " " " " " "	- - -		12		12
Single -	{ Male " " " " " "	- - -		20		20
	{ Female " " " " " "	- - -		8		8
CHILDREN:						
Males, between 1 and 12 years	- - -	- - -		4		2
Females " " " " " "	- - -	- - -		-		-
Under 1 year - - -	- - -	- - -		-		-
TOTAL - - -				55		53
INTERMEDIATE AND STERRAGE PASSENGERS.				Number of Souls.	Equal to Adults, computed by the Passengers Act.	
ADULTS:						
Married	{ Male - - - - -	- - -		11		11
	{ Female - - - - -	- - -		16		16
Single -	{ Male - - - - -	- - -		39		39
	{ Female - - - - -	- - -		3		3
CHILDREN:						
Males, between 1 and 12 years	- - -	- - -		11		5½
Females " " " " " "	- - -	- - -		11		5½
Under 1 year - - -	- - -	- - -		3(1 male)		-
TOTAL - - -				94		80
C R E W.				Number.	Equal to Adults, Computed by the Passengers Act.	
Men - - - - -	- - -	- - -		80		80
Boys - - - - -	- - -	- - -				
TOTAL - - -				80		80
TOTAL Number of Adults, including Crew, computed according to the Passengers Act						213

I, the undersigned, acting under the authority of the Passengers Act, do hereby certify that the foregoing appear to be the burthen and dimensions of the above-named vessel, and also to be the number and description of her passengers and crew. And I further certify that I have approved of the quality of the provisions, water, and stores put on board for the use of the passengers, and that I have inspected the list of passengers of the said vessel, and that it appears to be correct, and that the number of passengers does not exceed the number allowed by the Passengers Act. And finally, I certify that all the requirements of the said Act, so far as the same can be complied with before the departure of the said ship, have been duly complied with, and that the said ship is, in my opinion, seaworthy, in safe trim, and in all respects fit for her intended voyage; and that her passengers and crew are in a fit state to proceed.

London, 28 December 1865.

Jas. S. Lean,
Emigration Officer for the Port of London.

(Additional.)

CLEARING CERTIFICATE for PASSENGER SHIPS.

Name of Ship.	Registered Tonnage.	Aggregate Number of Superficial Feet in the several Compartments set apart for Passengers other than Cabin Passengers.	Total Number of Statute Adults the Ship can legally carry, exclusive of Master, Crew, and Cabin Passengers.	Intending to Touch at	Bound to	Name of Master.
"London" - -	1,752	1,800	120	- -	Melbourne	J. B. Martin.
CABIN PASSENGERS.				Number of Souls.	Equal to Adults, computed by the Passengers Act.	
ADULTS:						
Married	{ Male	12 years and upwards	- - -	9		9
	{ Female	" "	- - -	7		7
Single -	{ Male	" "	- - -	9		9
	{ Female	" "	- - -	4		4
CHILDREN:						
Males, between 1 and 12 years	-	-	- - -	1		$\frac{1}{2}$
Females "	"	"	- - -	1		$\frac{1}{2}$
Under 1 year	-	-	- - -	-		-
TOTAL - - -				31		30
INTERMEDIATE AND STEERAGE PASSENGERS.				Number of Souls.	Equal to Adults, computed by the Passengers Act.	
ADULTS:						
Married	{ Male	- - -	- - -	3		3
	{ Female	- - -	- - -	3		3
Single -	{ Male	- - -	- - -	11		11
	{ Female	- - -	- - -	1		1
CHILDREN:						
Males, between 1 and 12 years	-	-	- - -	4		2
Females "	"	"	- - -	3		$1\frac{1}{2}$
Under 1 year	-	-	- - -	-		-
TOTAL - - -				25		$21\frac{1}{2}$
C R E W.				Number.	Equal to Adults, computed by the Passengers Act.	
Men - - -	- - -	- - -	- - -	83	83	
Boys - - -	- - -	- - -	- - -			
TOTAL - - -				83		83
TOTAL Number of Adults, including Crew, computed according to the Passengers Act					134 $\frac{1}{2}$	

I, the undersigned, acting under the authority of the Passengers Act, do hereby certify that the foregoing appear to be the burthen and dimensions of the above-named vessel, and also to be the number and description of her passengers and crew. And I further certify that I have approved of the quality of the provisions, water, and stores put on board for the use of the passengers, and that I have inspected the list of passengers of the said vessel, and that it appears to be correct, and that the number of passengers does not exceed the number allowed by the Passengers Act. And finally, I certify that all the requirements of the said Act, so far as the same can be complied with before the departure of the said ship, have been duly complied with, and that the said ship is, in my opinion, seaworthy, in safe trim, and in all respects fit for her intended voyage; and that her passengers and crew are in a fit state to proceed.

Plymouth, 5 January 1866.

John L. R. Stoll,
Emigration Officer for the Port of Plymouth.

Registrar's Office, H.M. Customs, Plymouth, 27 January 1866.

I hereby certify that this is a correct copy of the Clearing Certificate for the late ship "London," lodged at this office.

J. Ramsay, Registrar.

IRON SHIPS.

No.

SURVEY held at London ; Date, 4 October 1864 ; on the Screw Steamer " London " (Iron) ; Master, J. B. Martin.

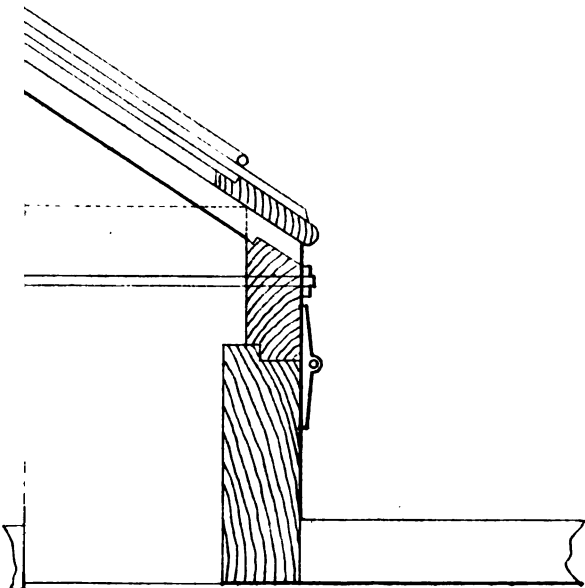
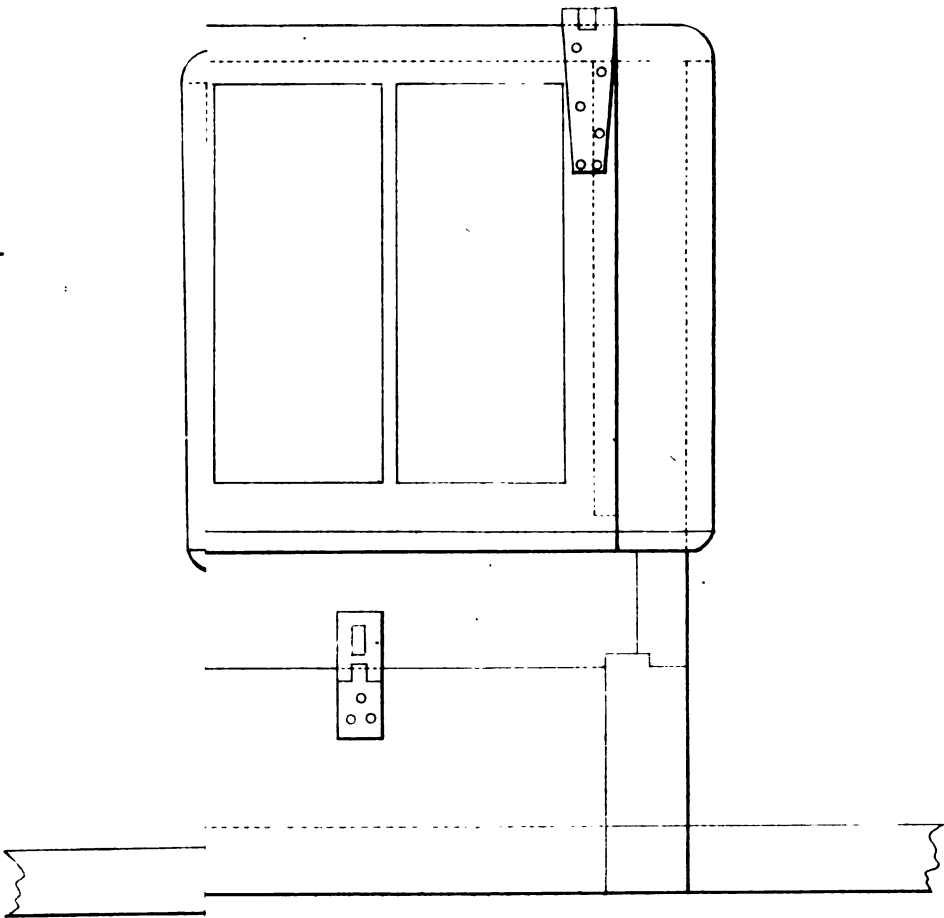
Tonnage:	Built at Blackwall.	Port belonging to	- London.
Gross - - - - 1,752.29	When built - - - 1864.	Destined voyage - -	Australia.
Under deck - - - 1,567.74	By whom built - - - Wigram & Sons.	If surveyed afloat or	While building, at East
Engine-room - - - 923.60	Launched - - - 20th July.	in dry dock - - }	India Dock.
R-gister - - - 1,428.69	Owners - - - Wigrams.		

Length aloft - -	Feet. 267	Inches. 2	Extreme breadth -	Feet. 35	Inches. 9	Depth from top of upper deck beam to top of floor.	Feet. 24	Inches. 1	Power of engines -	Horse No. 200
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Distance of frames or ribs from moulding edge to moulding edge, all fore and aft	Inches in Ship.		16ths in Ship.	1,500		16ths required per rule.	Inches in Ship.	16ths in Ship.	1,500	
				Inches required per rule.					Inches required per rule.	16ths required per rule.
	24	-		24	-					
	Inches in Ship.	Inches in Ship.		Inches required per rule.	Inches required per rule.					
	5½	3½	10/16	5½	3½	10/16				
Floors, size of angle iron, and No. 2 at bottom of floor plate for ½ length.	24½	-	11/16	24½	-	11/16				
Floors, depth and thickness of floor plate at mid line.	-	5½	11/16	-	5½	11/16				
Floors, depth and thickness of floor plate at bilge keelson.	4	3½	9/16	4	3½	9/16				
Floors, size of reversed angle iron, and No. 1 at top of floor plate.	5½	3½	10/16	5½	3½	10/16				
Frames, size of angle iron, single.	4	3½	9/16	4	3½	9/16				
Frames, size of reversed iron to every frame to mid deck, and alternate frame to upper deck.	-	9	9/16	-	9	9/16				
Beams, deck (No. 66), bulb iron, with double angle iron on top.	3½	3	6/16	3½	3	6/16				
Beams, deck, double angle iron, on upper edge.	-	4 feet	-	-	4 feet.	-				
Beams, deck, average space between.	< 3½	9	9/16	3½	9	9/16				
Beams, hold, or lower deck (No. 64), bulb iron, with double angle iron on top.	-	3	6/16	-	3	6/16				
Beams, hold, average space between.	-	4 feet	-	-	4 feet.	-				
Keelson, iron, size of plate ; give sketch and dimensions.	-	double	< iron.	-	-	-				
Keelson, side or bilge	6	5½	9/16	-	-	-				
Keelson, number	-	1 bilge ; 1 intercostal.	-	-	-	-				
Stem, intercostal bars	34	10	11/16	34	10	11/16				
Stem, if plate iron, breadth and thickness.	-	-	-	-	-	-				
Stern-post, if bar iron, moulding and thickness.	10	6	10	10	6	10				
Stern-post, if plate iron, breadth and thickness.	-	-	-	-	-	-				
Keel, if middle line, intercostal plate	34	11/16	-	34	11/16	-				
Keel, if plate iron, breadth and thickness, side plates.	10	1½	-	10	1½	-				
Garboard plates, thickness.	-	-	-	-	-	-				
From garboard to upper part of bilge.	-	-	-	-	-	-				
From upper part of bilge to sheerstrakes.	-	-	-	-	-	-				
Sheerstrakes	-	-	-	-	-	-				
Breadth and thickness of butt straps to outside plating.	3 feet.	13/16	-	3 feet.	13/16	-				
Planksheers	Iron	-	-	Iron	-	-				
Gunwale plate or stringer on ends of upper deck beams.	-	26	8/16	-	26	8/16				
Angle iron on ditto	-	5½ x 6	9/16	-	5½ x 6	9/16				
Waterway thick strake deck.	-	6 x 4	-	-	6 x 4	-				
Deck	-	4	-	-	4	-				
Ceiling in hold	-	3	-	-	3	-				
Ceiling betwixt decks	-	2	-	-	2	-				
Beam, upper deck, spir-ketting.	-	20 x ¾	-	-	20 x ¾	-				
Beam stringer plates on ends of hold or lower deck beams	-	< 6 x 5½ x 9/16	-	-	< 6 x 5½ x 9/16	-				
Stringer or tie plates outside hatchways.	-	13½ x 11/16	-	-	13½ x 11/16	-				
Deck beam stringer	-	29 x 11/16	-	-	29 x 11/16	-				
Stringers in hold	-	< 6 x 5½ x 9/16	-	-	< 6 x 5½ x 9/16	-				
Bilge	-	6 x 5½ x 9/16	-	-	6 x 5½ x 9/16	-				
Deck, lower	-	Yellow pine	3	-	Yellow pine	3				
Deck, upper, how fastened to beams ?—Screw bolts, with nuts.										

Deck, upper, how fastened to beams?—Screw bolts, with nuts.

Transoms, material—Iron. } Bulkheads, number, 5 ; thickness of, 8/16.
Knight-heads, material—None. } Bulkheads, how secured to the sides of the ship?—Double frames and liners.
Hawse timbers, material—None. } Are they free from defects? Bulkheads, size of vertical angle iron, and their distance apart—4 $\frac{1}{2}$ x 3 $\frac{1}{2}$ x 9/16—2 ft. 6 in.
The frames or ribs extend in one length from keel to gunwale, riveted through plates with $\frac{7}{8}$ in. rivets, about 7 ins. apart.
The reverse angle irons on the floors extend in one length across the middle line, from 6 ft. beyond centre line to gunwale and middle deck alternately.
The reverse angle irons on the frames extend in one length across the middle line, as above.
Keelson ; how are the various lengths of plates or angle irons connected?—By butt straps, double riveted.
Plates, garboard, double riveted to keel and at upper edge, with rivets $\frac{1}{2}$ in. diameter, averaging $\frac{43}{4}$ ins. from centre to centre of rivet.
Plates, edges from garboards to upper part of bilge, worked clench, double riveted ; rivets $\frac{7}{8}$ in. diameter, averaging 3 $\frac{1}{2}$ ins. from centre to centre of rivets.
Plates, butts from keel to turn of bilge, worked carvel with a lining piece $\frac{13}{16}$ thick, double riveted ; rivets $\frac{7}{8}$ in. diameter, averaging 3 $\frac{1}{2}$ ins. from centre to centre of rivets. Do the lining pieces lap over and rivet through the lands of the strake below?—Yes.
Plates, edges from bilge to planksheer, worked clench, double riveted ; rivets $\frac{7}{8}$ in. diameter, averaging 3 $\frac{1}{2}$ ins. from centre to centre of rivets. Do the lining pieces lap over and rivet through the lands of the strake below?
Plates, butts from bilge to planksheers, worked carvel, with a lining piece, 11/16 to 13/16 thick, double riveted ; rivets $\frac{7}{8}$ in. diameter, averaging 3 $\frac{1}{2}$ ins. from centre to centre of rivets. Breadth of laps in double riveting, 5 ins.
Deck trussing, three pairs diagonals ; breadth and thickness of plates, 13 $\frac{1}{2}$ to 11/16. How secured?—Double riveted.
Deck beams ; how secured to the side?—Knee plates, riveted to beams and frames.
Hold or lower deck ; how secured?—The same as above.
Number of breasthooks, six.
What description of iron is used for the angle iron and plate iron in the vessel?—Weardale best best.



Nº 150..“LONDON” STEAM SHIP.

LONDON”

IRON SHIPS—continued.

WORKMANSHIP.

Are the lands or laps of the clenchwork in all cases in breadth at least five times the diameter of the rivets in double riveted edges and butts, and at least three times the diameter of the rivets where single riveting is admitted?—Yes.

Do the edges of the carvel work and of the butts lay close together throughout their length, without requiring any making good of deficiencies?—Yes.

Do the fillings between the ribs and plates fill in solid with single pieces, or are they in short lengths of various thicknesses?—Solid pieces in one length.

Do the holes for riveting plate to frames, lining pieces, or plate to plate, &c., conform well to each other?—Yes. And are the rivet holes well and sufficiently countersunk in the outer plate?—Yes.

Are there any rivets which either break into or have been put through the seams or butts of the plating?—A few.

Her masts, yards, &c., are in new condition, and sufficient in size and length.

She has SAILS.		CABLES, &c. Lloyd's Proving House.			ANCHORS, and their Weights. Lloyd's Proving House.			
No.			Fthms.	Ins.	Tons. cwt.	No.	Weight. Cwt. qrs. lbs.	
2	Fore sails.	Chain, tested to 67½ Tons.	300	1½	Bowers, ex. stocks { 35 8 34 17 35 4 }	3	{ 30 2 0 38 2 12 30 0 12 }	
2	Fore top sails.	Hempen stream cable	90	10½				
1	Fore topmast stay sail.	Hawser, chain - -	90	1½				
2	Main sails.	Towlines - - -	90	7	Stream - - -	13 15	1	11 3 6
2	Main top sails.	Warp - - -	90	5	Kedge - - { 8 3 6 1 }	2	{ 5 3 24 2 3 20 }	
	And a single suit of other sails.	(All of best quality.)						

Her standing and running rigging is wire and hemp, sufficient in size and good in quality.

She has two lifeboats, two long boats, and three other boats.

The present state of the windlass is patent capstan and steam winch, and rudder good; pumps, two steam and two engine pumps.

GENERAL REMARKS, Statement and Date of Repairs, Extent of Corrosion (if any), both internally and externally, and Condition of Rivets.

Dates of Surveys held while building, as per Section 17.	1st. On the several parts of the frame, when in place, and before the plating was wrought - - - - -	23d December 1863 to 4th October 1864.
	2d. On the plating during the progress of rivetting - - - - -	
	3d. When the beams were in and fastened, and before the decks were laid - - - - -	
	4th. When the ship was complete, and before the plating was finally coated - - - - -	
	5th. After the ship was launched - - - - -	

This vessel has a full poop and top gallant fore-castle-built in accordance with the rules. She is a full rigged sailing ship, with auxiliary steam power, 200 horses nominal; and the screw propeller is adopted for lifting when not required. Her lower masts and bowsprit are of iron, and lower and top sail yards of cast and puddled steel; the bowsprit and masts are of four plates, of 7/16 (with double chain riveted butts, and edges having four angle irons inside) each, taking the inner row of seam rivets. She is in all respects a good vessel, and, in my opinion, eligible to be classed as recommended.

The owners request that the horse power may be omitted from the register book when the vessel is entered.

By referring to the midship section it will be seen that the outside plating and frames are carried up 16 inches higher than ordinary, and also that she has an iron plank-sheer 10 x 8/16, and spir-ketting plate 16 x 3/4, forming, in fact, an iron box girder at the gunwale; she has also three pairs of diagonal tie plates on beams, 13½ x 11/16.

In what manner are the surfaces preserved from oxidation?—By red lead. Portland cement in the flat.

I am of opinion this vessel should be classed Aa 1.

(signed) Thomas W. Warren.

(1060.)

Greenwich Police Court,
1 March 1866.

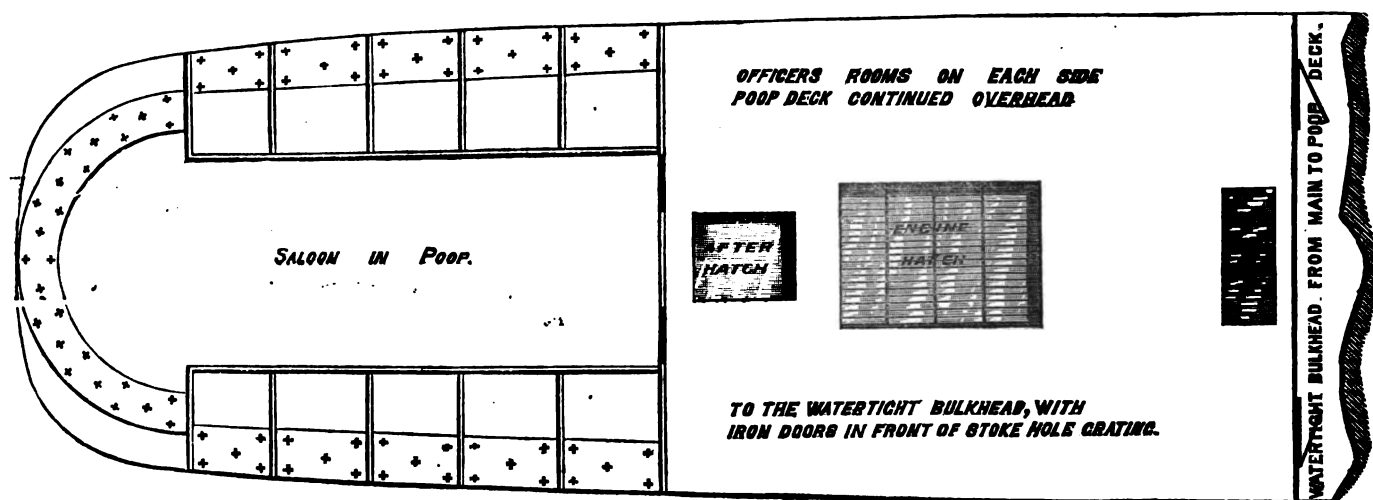
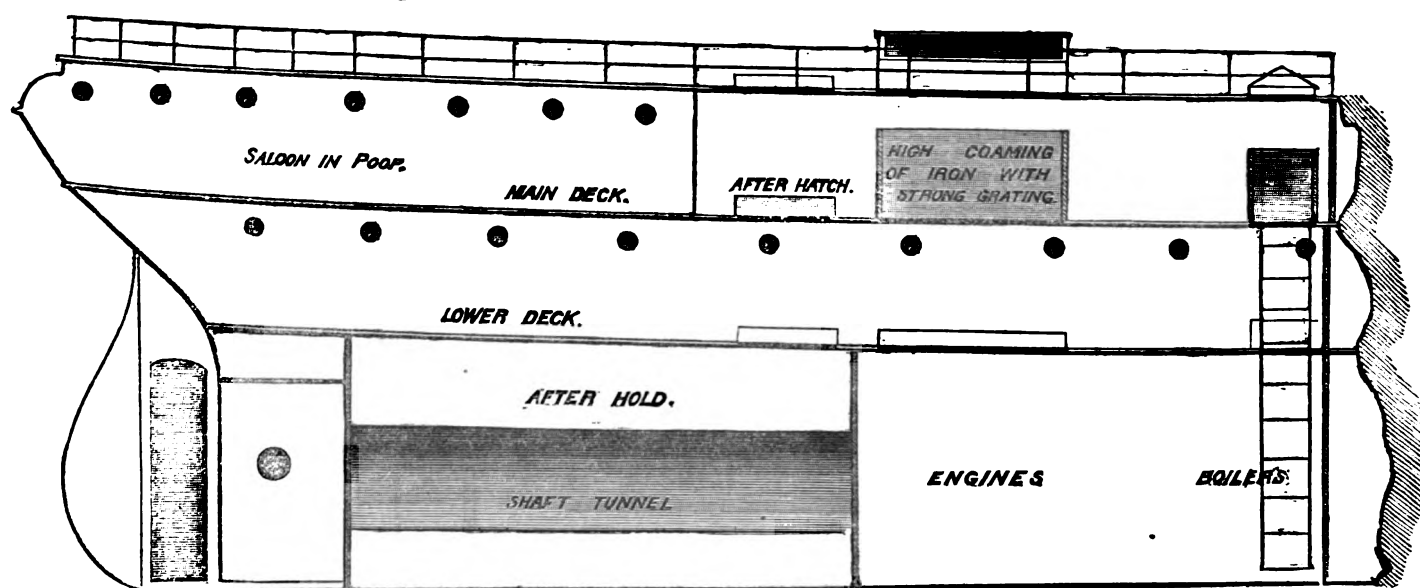
My dear Sir,
I BEG to transmit herewith the sketches mentioned in Mr. Barber's evidence, showing the method of protecting engine-room hatches in the "Atalanta" and other vessels built at Glasgow.

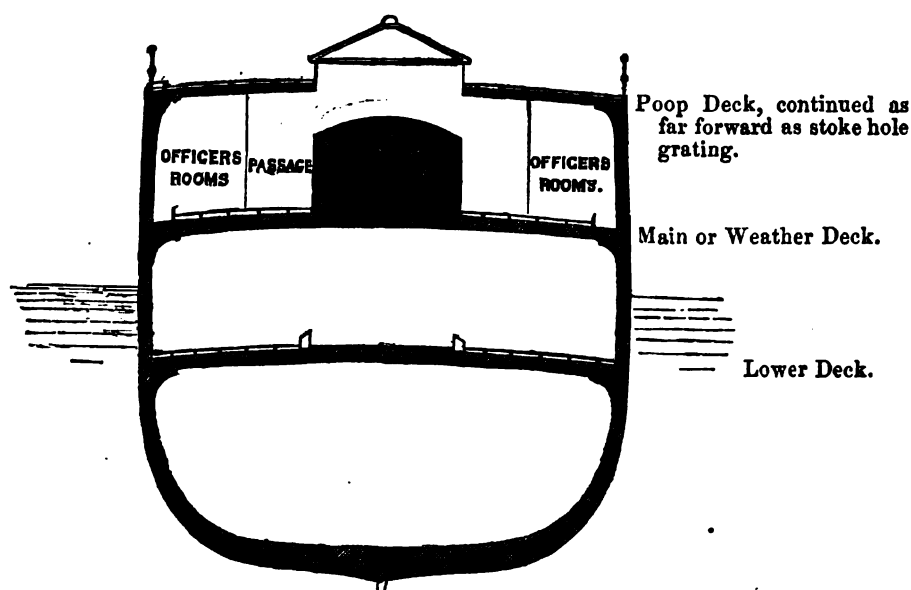
Captain Walker.

I am, &c.,
(signed) Pro A. G. Boustred.

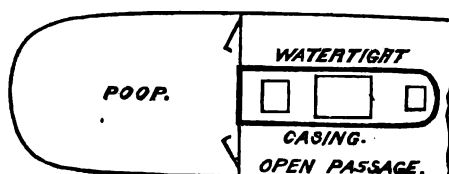
No. 1.

ROUGH SKETCH showing Method of protecting Engine-room Hatchways, when the Engine-room is well aft, as carried out in "Atalanta," "Bellona," "Cella," and "Uruguay;" built at Glasgow, from 1860 to 1865.





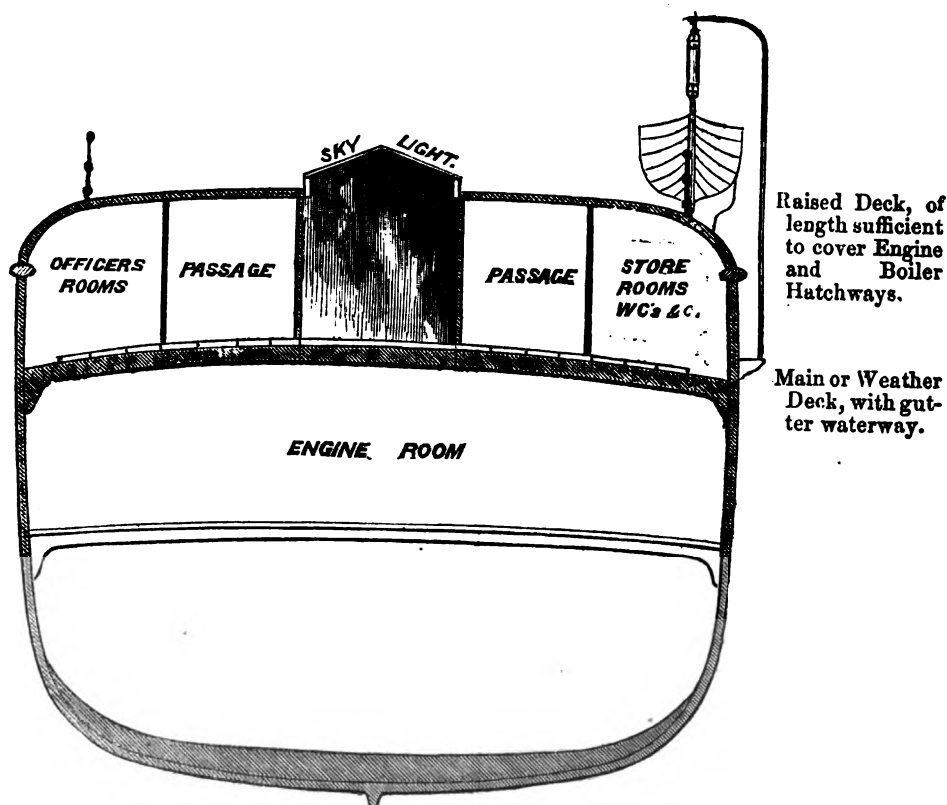
If it is thought undesirable to prolong the poop deck its whole width, as is shown here, the same protection may be obtained by carrying up an iron casing around the hatchway, and continuing the poop-deck only at the middle line, thus:—



George Barber.

No. 2.

SKETCH showing Method of protecting Engine Hatchway in Coasting Steamers where the Engine-room is amidships.



In the wake of the engine and boiler space the frames of the vessel are carried up and continued over head, so as to form beams for a raised deck, which need not be of greater

length than sufficient to cover the engine and boiler hatchways. The skylight is fitted on this deck, and from the main deck up to it is an iron casing with entrance doors for the engineers. The captain's house is usually on this deck, and the officers' rooms, &c., in the wings underneath.

No. 3.

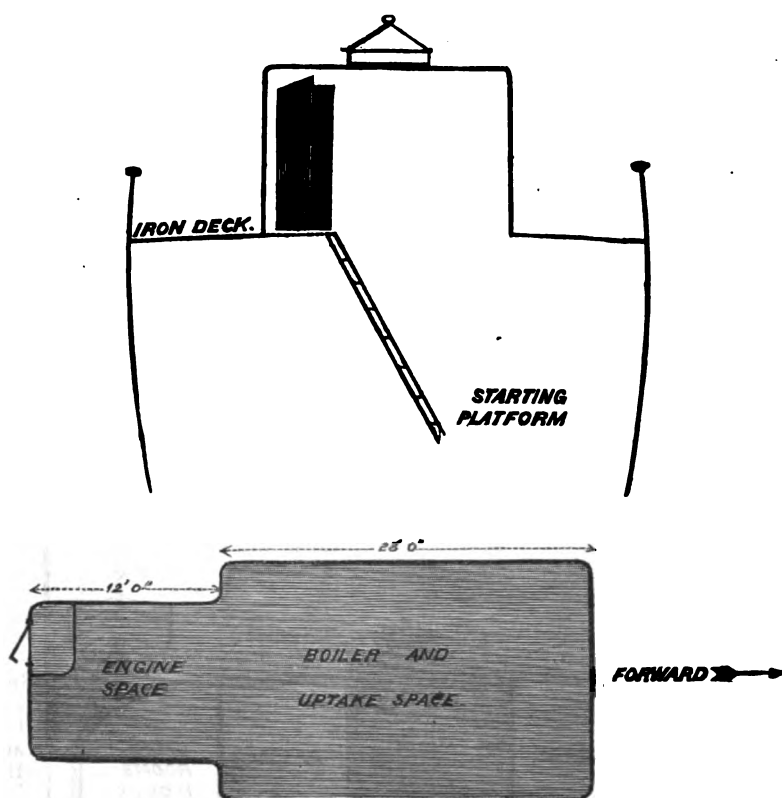
SECTION showing Casing around Engine and Boiler Hatchways of Messrs. Bibby's Steam Ships "Egyptian," "Dalmatian," "Arabian," and "Persian."

			Feet. ins.			Tons.
Length	-	-	361 8	Gross	-	2,075
Breadth	-	-	34 2	Registered	-	1,770
Depth	-	-	24 3			

as surveyed at Greenock when new, 1860 to 1863.

George Barber.

N.B.—These vessels have their weather decks of iron.



Iron casing carried up about seven feet above deck, with iron top. This iron top is continued forward over a deck house, and is used by the captain and passengers.

"LONDON" STEAM SHIP.

**COPY of EVIDENCE taken at the OFFICIAL
INQUIRY ordered by the BOARD of TRADE
into the Loss of the Steam Ship "LONDON."**

(Presented to Parliament by Her Majesty's Command.)

*Ordered, by The House of Commons, to be Printed,
23 March 1866.*

[Price 2 s.]

150.

Under 8 oz.

MERCANTILE MARINE FUND.

1 8 6 5.

**AN ACCOUNT of the MERCANTILE MARINE FUND, under the Act
17 & 18 Vict. cap. 104, sec. 429, showing the INCOME and EXPENDITURE
for the Year 1865; and STATEMENT showing the Number and Amount
of SEAMEN'S MONEY ORDERS Issued and Paid at PORTS in the UNITED
KINGDOM.**

(PRESENTED PURSUANT TO ACT OF PARLIAMENT.)

*Ordered, by The House of Commons, to be Printed,
11 May 1866.*

AN ACCOUNT of the MERCANTILE MARINE FUND, under the Act 17 & 18 Vict. c. 104, showing of Net Income since Received, and how the same

R E C E I P T S.	EXCHEQUER BILLS.			CASH.		
	£.	s.	d.	£.	s.	d.
For Balances on hand 1st January 1864, as shown in preceding Account -	100,000	-	-	39,092	16	9
For Interest received on Exchequer Bills and on Accounts of Superintendents of Mercantile Marine Offices at Local Banks - - - - -	-	-	-	4,270	7	10
For Proceeds of Sale of 70,000 <i>l.</i> Exchequer Bills (<i>see contra</i>) - - -	-	-	-	70,614	14	5
£.	180,000	-	-	113,977	19	-

Board of Trade, }
5 May 1866. }

the BALANCE of CASH and the AMOUNT of EXCHEQUER BILLS held on 1st January 1865, with the Amount has been appropriated, made up to the 31st December 1865.

P A Y M E N T S.			EXCHEQUER BILLS.			CASH.		
			£.	s.	d.	£.	s.	d.
Paid Pensions granted by the Trinity House Corporation before the 1st October 1853, for 4 Quarters - - - - -			-	-	-	3,954	7	11
Paid Pensions and Superannuation Allowances on Account of Ballastage Service on the expiration of the Act, 6 & 7 Vict. c. 57. - - - - -			-	-	-	1,268	14	11
Paid for New Works in Building Lighthouses, &c., as shown in Statement (B.) in the Appendix, page 5 - - - - -			-	-	-	34,142	3	1
Paid Expenses of Investigations into the conduct of Masters and Mates - - - - -			-	-	-	401	2	7
Paid Expenses of Life Boats, Apparatus for saving Life, and Gratuities for saving Lives during the year 1865 - - - - -			-	-	-	9,758	14	3
Exchequer Bills sold (<i>see contra</i>) - - - - -			70,000	-	-	-	-	-
By Excess of Working Expenditure over Income for the year ending 31 December 1865, as shown in the Account (A.) in the Appendix, page 4 - - - - -			-	-	-	16,610	16	-
By Balance unappropriated - - - - -			90,000	-	-	47,842	-	3
			£.	160,000	-	118,977	19	-
PARTICULARS of the above BALANCE:								
In the hands of the Paymaster-General - - - - -			-	-	-	9,395	16	1
„ Superintendents of Mercantile Marine Offices - - - - -			-	-	-	12,538	18	4
„ Receivers of Wreck - - - - -			-	-	-	1,271	12	5
„ Trinity House Corporation - - - - -	£.	s.	d.	19,477	5	4		
„ Port of Dublin Corporation - - - - -				10,078	11	7		
„ Commissioners of Northern Lights - - - - -				6,241	17	5		
Advanced on account of Vote for Relief of distressed Seamen Abroad - - - - -				1,458	8	9		
Advanced on account of Postal Services - - - - -				114	-	9		
„ „ Army Services - - - - -				545	12	1		
„ „ Seamen's Savings Banks - - - - -				180	16	11		
				-	-	38,096	12	10
DEDUCT,								
For Amount to be repaid to Merchant Seamen's Fund - - - - -				369	12	5		
„ „ to Wages, &c., of deceased Seamen - - - - -				1,315	4	5		
„ „ to Commissioners of Inland Revenue - - - - -				199	11	3		
„ „ to Receiver of Fines for the Crown - - - - -				175	13	8		
„ „ on account of unclaimed Wreck and Salvage - - - - -				2,234	15	5		
„ „ for Seamen's Money Orders unpaid * - - - - -				2,915	19	7		
„ „ Seamen's Wages and sundry Compensations received - - - - -				638	3	10		
„ „ Wexford Harbour - - - - -				4,350	5	-		
„ „ Chain Cables and Anchors - - - - -				91	6	-		
„ „ Naval Services - - - - -				743	14	3		
„ „ Ramsgate Harbour Fund - - - - -				426	13	7		
				-	-	13,460	19	5
			£.	47,842	-	3		

* Note.—A Statement of the Money Orders issued to Seamen will be found on page 7.

H. R. Williams,
Accountant.

Appendix.

Account (A.), referred to at page 8.

AN ACCOUNT of the Gross Income and Working Expenditure of the MERCANTILE MARINE FUND, for the Year ending 31 December 1865.		Cr.	
INCOME.		EXPENDITURE.	
For Fees, &c., received under the Merchant Shipping Act, as per Account (C.), page 6	£. s. d. 57,529 8 2	For Salaries and Expenses at the Mercantile Marine Offices at the various Ports of the United Kingdom, including salaries and fees paid to Surveyors of Steam Ships, as per Account (C.), page 6	£. s. d. 58,534 12 6
For Light Dues received; viz.:		For Expenses paid for the maintenance of Lighthouses, viz.:	
Per Trinity House Corporation	£. s. d. 215,090 9 4	By the Trinity House Corporation	£. s. d. 179,727 1 6
" Port of Dublin Corporation	16,352 12 2	" Port of Dublin Corporation	58,671 16 7
" Commissioners of Northern Lighthouses	27,202 8 7	" Commissioners of Northern Lighthouses	38,592 6 2
	257,645 5 1		276,991 4 3
For Ballastage Rates received:		For Expenses paid on Ballastage Rates:	
Per Trinity House Corporation	19,780 16 5	By the Trinity House Corporation	21,020 8 11
To Balance, being Excess of Working Expenditure over Income	16,610 16 -		
	£. 351,646 5 8		£. 351,646 5 8

STATEMENT (B.), referred to at page 3.

STATEMENT of the Sums expended for New Works in BUILDING LIGHTHOUSES, &c., in the United Kingdom, from 1 January 1865 to 31 December 1865.

NATURE OF WORK.	—			—		
	£.	s.	d.	£.	s.	d.
ENGLAND:						
St. Bees - - - - -	1,199	9	5			
Lowestoftness - - - - -	8,970	16	7			
Wolf - - - - -	7,519	9	6			
Dovercourt - - - - -	192	-	-			
Usk - - - - -	3,193	-	9			
New Light Vessel, No. 43 - - - - -	58	15	6			
Portland - - - - -	68	19	8			
				16,197	11	5
IRELAND:						
Calf Rock - - - - -	4,822	13	-			
Arranmore - - - - -	200	4	-			
Innish Tereaght - - - - -	2,457	-	4			
New Light Ship - - - - -	3,017	2	6			
Black Sod Point New Lighthouse - - - - -	1,392	10	8			
				11,889	10	1
SCOTLAND:						
Auskerry Lighthouse - - - - -	1,946	5	3			
Monach Isles „ - - - - -	956	19	-			
Skervuile - - - - -	2,028	9	1			
Patterson Beacon - - - - -	937	12	6			
Skerrinoe „ - - - - -	35	14	-			
Salachan „ - - - - -	31	16	9			
Riv Rock „ - - - - -	66	5	-			
Sound of Harris Beacon - - - - -	15	15	-			
Expenses connected with proposed New Lighthouses - - - - -	36	5	-			
				6,055	1	7
	£.			34,142	3	1

ACCOUNT (C.), referred to at page 4.

AN ACCOUNT of the INCOME and EXPENDITURE for Fees received for Examinations of Masters and Mates, for Engaging and Discharging Crews, for Surveys of Steam Vessels, and by Receivers of Wreck, under the Merchant Shipping Act, 1864, for the Year ending 31 December 1865.

F E E S.				EXPENDITURE.				EXCESS OF	
On Examination of Masters and Mates.	On Engagement of Crews.	On Discharge of Crews.	On Renewal of Certificates.	TOTAL INCOME.	OFFICES, &c.	Salaries.	Contingencies.	Supernumeration Allowances.	Total EXPENDITURE.
£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.		£. s. d.	£. s. d.	£. s. d.	£. s. d.
1,444 4 -	1,592 13 6	2,545 4 -	42 14 -	5,624 15 6	BOARD OF TRADE (Marine Department) -	3,793 18 3	1,092 16 4	52 - -	4,938 14 7
- - -	1,367 10 -	1,344 17 -	24 16 2	2,737 3 2	PORT OF LONDON (Hammett-street) -	1,272 10 7	315 2 11	- - -	1,587 13 6
- - -	864 1 -	1,106 14 6	18 15 -	1,989 10 6	" (Poplar) -	1,198 12 10	257 17 6	22 - -	1,478 10 4
862 12 -	163 14 -	428 15 -	4 - -	959 1 -	" (Dock-street) -	781 14 -	202 16 2	- - -	984 10 2
214 15 -	384 11 -	595 - -	6 18 10	1,201 4 10	BRISTOL -	894 14 8	133 11 10	- - -	1,028 6 6
1,646 5 -	5,038 10 6	4,902 - -	46 - -	11,632 16 -	HULL -	6,598 12 10	1,910 7 10	24 8 7	8,533 9 3
85 - -	215 8 6	174 - -	2 10 6	476 19 -	LIVERPOOL -	(a) 277 10 -	89 11 10	- - -	367 1 10
188 5 -	867 15 -	138 5 -	4 2 -	1,198 7 -	NEWCASTLE -	1,456 5 -	277 8 7	- - -	1,733 13 7
398 - -	825 15 6	280 19 6	2 3 -	1,501 18 -	NORTH SHIELDS -	694 10 -	79 17 7	10 1 8	784 9 3
575 5 -	985 15 -	224 2 1	8 11 -	1,793 13 1	SOUTH SHIELDS -	977 15 -	248 3 7	- - -	1,225 18 7
493 10 -	140 15 -	148 14 6	3 2 6	786 2 -	SUNDERLAND -	589 6 8	107 13 10	- - -	697 - 6
249 5 -	109 12 -	95 16 -	4 7 6	459 - 6	PLYMOUTH -	505 - -	95 2 2	- - -	600 2 2
390 - -	198 15 -	221 13 6	3 13 6	814 2 -	ABERDEEN -	647 - -	71 3 11	- - -	718 3 11
356 15 -	741 12 -	340 16 6	6 6 -	1,445 9 6	DUNDEE -	881 6 5	205 6 11	12 19 6	1,099 12 10
173 7 -	448 8 6	582 10 6	5 6 -	1,209 12 -	GLASGOW -	942 7 8	88 10 9	- - -	1,026 18 5
127 - -	168 19 -	262 12 -	1 15 6	560 6 6	GREENOCK -	508 8 4	71 3 3	- - -	579 6 7
193 5 -	86 10 -	113 6 -	- 19 6	394 - 6	LEITH -	398 3 2	37 8 1	- - -	435 11 8
225 - -	95 12 -	132 9 8	1 17 6	454 19 2	BELFAST -	570 15 -	166 11 1	- - -	737 6 1
840 15 -	77 16 -	140 19 -	2 11 -	562 1 -	CORK -	474 2 -	24 15 -	- - -	498 17 -
139 - -	4,106 14 -	3,276 15 6	37 7 2	7,559 16 8	DUBLIN -	9,684 17 6	1,218 19 5	- - -	10,803 16 11
7,597 3 -	18,480 7 6	17,055 10 9	227 16 8	43,360 17 11	MINOR PORTS of the United Kingdom (b) -	33,047 4 11	6,882 4 11	121 9 9	40,000 19 7
To Printed Forms sold at Mercantile Marine Offices -				2 18 -	TOTAL - - - £.	38,047 4 11	6,882 4 11	121 9 9	44,431 11 9
" Fees received for Surveys of Steam Vessels -				7,231 3 7	Salaries and Expenses of Surveys, &c., of Steam Vessels, and for Remuneration of Examiners, and Expenses of Examinations				
" Fees, &c., received for Examination of Engineers -				793 - -	- - -				
" Fees for Inspection of Register Books received by Registrar-General of Seamen -				239 5 -	- - -				
" Fees for Copies of Documents received by Registrar-General of Seamen -				47 3 2	- - -				
" Fees, &c., received by Receivers of Wreck -				5,865 - 6	- - -				
TOTAL - - - £.				57,529 8 2	TOTAL - - - £.				
					58,534 12 6				
					8,426 7 5				
					4,431 11 9				
					£. 3,994 15 8				

(a) The salaries of the Joint Examiners for North and South Shields, Newcastle and Sunderland, are paid at and charged to North Shields, and thus make the expenditure of that port appear larger than it really is.

(b) This amount includes remuneration paid for the years 1864 and 1865 to the Officers of Customs who act as Superintendents of Mercantile Marine at the Minor Ports, and as Receivers of Wreck, for the additional duties imposed upon them.

(Referred to at page 3.)

STATEMENT showing the Number and Amount of SEAMEN'S MONEY ORDERS issued and paid at PORTS in the UNITED KINGDOM from 1855 to 1865, both years inclusive; also the Number and Amount of such ORDERS issued at the Seven undermentioned CONTINENTAL PORTS to which the System has been extended since the 1st April 1865.

				ISSUED.			PAID.		
				Number.	Amount.		Number.	Amount.	
At Ports in the United Kingdom :					£.	s. d.		£.	s. d.
From 1 May to 31 December 1855	-	-	-	4,640	76,952	4 4	4,461	74,664	12 6
In	-	-	1856	12,072	139,495	- 4	12,095	140,417	- 10
In	-	-	1857	15,606	133,661	8 5	15,649	133,045	19 2
In	-	-	1858	21,293	154,001	18 10	21,251	153,945	1 -
In	-	-	1859	25,119	160,649	12 11	25,038	160,240	- -
In	-	-	1860	28,381	169,925	11 3	28,424	170,485	16 9
In	-	-	1861	31,978	188,616	10 11	32,010	188,810	6 7
In	-	-	1862	34,153	100,508	4 2	34,048	189,761	2 8
In	-	-	1863	39,150	216,126	6 1	39,125	215,718	12 4
In	-	-	1864	43,884	238,322	16 3	43,843	238,715	7 4
In	-	-	1865	45,680	261,198	18 11	45,980	264,632	7 2
* By Consuls at the following Continental Ports during the Nine Months ended 31 December 1865, viz.:				401	4,948 1 -		—	—	
Antwerp	-	-	39						
Bordeaux	-	-	44						
Hamburg	-	-	74						
Havre	-	-	53						
Nantes	-	-	3						
Rotterdam	-	-	58						
Marseilles	-	-	180						
				302,357	1,934,406	13 5	301,824	1,930,436	6 4
				301,824	1,930,436	6 4			
				533	3,970	7 1	Outstanding 31 December 1865.		

In hands of Her Majesty's Paymaster General	-	-	-	-	£.	s.	d.
" " Consuls	-	-	-	-	2,915	19	7
Loss by exchange on remittances by Consuls to United Kingdom	-	-	-	-	1,041	14	2
					12	13	4
					£.	3,970	7 1

* Note.—The orders issued at the Continental Ports are payable in the United Kingdom only. The payment of these orders is, therefore, included in the amount paid at Ports in the United Kingdom.

Board of Trade, 5 May 1866.

H. R. Williams, Accountant.

MERCANTILE MARINE FUND.

1866.

AN ACCOUNT of the MERCANTILE MARINE FUND, under the Act 17 & 18 Vict. c. 104, showing the BALANCE of CASH and AMOUNT of EXCHANGE BILLS held on 1 January 1865, with the INCOME and EXPENDITURE from that Period to 31 December 1865; and STATEMENT showing the Number and Amount of SEAMEN'S MONEY ORDERS issued and paid at Ports in the UNITED KINGDOM from 1855 to 1865, both Years inclusive; also the Number and Amount of such ORDERS issued at seven CONTINENTAL PORTS, to which the System has been extended since 1 April 1865.

(Presented pursuant to Act of Parliament.)

Ordered, by The House of Commons, to be Printed,
11 May 1866.

264.

Under 1 oz.

MERCHANT SEAMEN'S FUND.

**ACCOUNT of the RECEIPT and EXPENDITURE under the SEAMEN'S FUND
WINDING-UP ACT, from 1st January to 31st December 1865; with an
ACCOUNT of the Sums Received and Paid for the Wages and Effects of
Deceased Seamen in the Year 1865.**

(Pursuant to Acts 14 & 15 Vict. c. 102, s. 59, and 17 & 18 Vict. c. 104, s. 202.)

*Ordered, by The House of Commons, to be Printed,
7 May 1866.*

AN ACCOUNT of the RECEIPT and EXPENDITURE under the SEAMEN'S

R E C E I P T S.		£.	s.	d.
To Balance in hand on 1st January 1865, as shown in the preceding Account, to 31st December 1864 - - - - -		87,291	-	1
To Amount received for Voluntary Contributions from Masters and Seamen - - - - -		1,854	14	3
To Amount of the Vote of Parliament for the year ending 31st March 1866 - - - - -		54,200	-	-
			</	

FUND WINDING-UP ACT, from 1st January to 31st December 1865.

P A Y M E N T S.

	£. s. d.	£. s. d.
By Amount paid for Pensions, including the sum of 507 <i>l.</i> 10 <i>s.</i> , granted by } way of Annuity to the late Officers of the Trustees whose offices were abolished }	52,840 12 7	
By Amount paid for Commutation of Pensions - - - - -	151 10 -	
		52,992 2 7
By Amount paid for Salaries and Charges of Management - - - - -	- - -	25 - -
By Amount paid into Her Majesty's Exchequer, being for amount received } for the Voluntary Contributions, in the year 1864, from Masters and Seamen }	- - -	1,986 14 11
By Balance in hand 31st December 1865 - - - - -	- - -	38,341 16 10
P A R T I C U L A R S O F T H E A B O V E B A L A N C E.		
Amount in the Exchequer - - - - -	37,000 - -	
Cash in the hands of Her Majesty's Paymaster General - - - - -	3,583 17 -	
Amount due from the Mercantile Marine Fund for Voluntary Contributions -	369 12 6	
	£. 40,953 9 5	
Less, Balance owing to the War Department and Officers of late Trustees } for Amount paid for Pensions to 31st December 1865 - - - - }	2,611 12 7	
	£. 38,341 16 10	98,345 14 4

Board of Trade, 3 May 1866.

H. R. Williams,
Accountant.

COMPARATIVE STATEMENT of the NUMBER and AMOUNT of the whole of the PENSIONS, and of each CLASS of PENSIONS, Granted in the Years 1864 and 1865.

Rate of Pension.	CLASS OF PENSIONERS.	1864.		1865.	
		Number.	Amount.	Number.	Amount.
			£. s. d.		£. s. d.
6 16 -	Masters - - - - -	164	1,115 4 -	135	918 - -
3 8 -	Seamen - - - - -	114	387 12 -	104	353 12 -
4 8 -	Widows of Masters - - - - -	146	642 8 -	115	506 - -
2 4 -	Widows of Seamen - - - - -	161	354 4 -	177	389 8 -
2 4 -	Children of Masters - - - - -	84	184 16 -	69	151 16 -
1 2 -	Children of Seamen - - - - -	60	66 - -	52	57 4 -
		729	2,750 4 -	652	2,376 - -

COMPARATIVE STATEMENT of the NUMBER and AMOUNT of the whole of the PENSIONS, and of each CLASS of PENSIONS, Expired in the Years 1864 and 1865.

CLASS OF PENSIONERS.	1864.		1865.	
	Number.	Amount.	Number.	Amount.
		£. s. d.		£. s. d.
Masters - - - - -	156	929 19 -	117	752 12 6
Seamen - - - - -	218	713 8 10	247	800 4 10
Widows of Masters - - - - -	151	554 14 10	156	583 8 8
Widows of Seamen - - - - -	369	758 11 6	360	727 11 2
Children of Masters - - - - -	182	371 9 2	166	336 17 -
Children of Seamen - - - - -	353	395 5 -	248	291 4 10
	1,429	3,723 8 4	1,204	3,491 19 -

COMPARATIVE STATEMENT of the NUMBER of PENSIONERS upon the FUND on the 31st December 1864 and 31st December 1865 ; distinguishing between Men, Women, and Children, and between different Scales of Pensions, and the Total Amount of Pensions of each Class.

CLASS OF PENSIONERS.	1864.		1865.	
	Number.	Amount.	Number.	Amount.
		£. s. d.		£. s. d.
Masters - - - - -	2,090	13,462 4 6	2,108	13,627 12 -
Seamen - - - - -	3,071	10,264 15 6	2,928	9,818 2 8
Widows of Masters - - - - -	3,466	13,013 3 2	3,425	12,935 14 6
Widows of Seamen - - - - -	6,293	13,207 - 1	6,110	12,868 16 11
Children of Masters - - - - -	924	1,820 1 10	827	1,635 - 10
Children of Seamen - - - - -	1,106	1,251 11 8	910	1,017 10 10
	16,950	53,018 16 9	16,308	51,902 17 9

AN ACCOUNT of the PROPERTY and MONEYS held by the TRUSTEES of the MERCHANT SEAMEN'S FUND, at the undermentioned PORTS, for Special Purposes distinct from the General Purposes of the FUND, and the Receipt and Expenditure for the same, for the Year 1865.

Sunderland - - -	<p>Freehold Ground in Assembly Garth, whereon are built several Houses and a Seamen's Hall; also 13 Houses in Trafalgar-square, Sunderland, subject to a Ground-rent of 5 <i>l.</i> per annum.</p> <p>Cash received for Rent of 12 <i>s.</i> per annum from the Inmates, and sundry other Receipts (including last year's Balance of 317 <i>l.</i> 19 <i>s.</i> 9 <i>d.</i>), 441 <i>l.</i> 14 <i>s.</i> 5 <i>d.</i></p> <p>Cash paid for Ground-rent, Insurance, Repairs, Water-rate, and Sundries, 89 <i>l.</i> 2 <i>s.</i> 6 <i>d.</i></p> <p>Leaving a Balance in the hands of the Trustees of 352 <i>l.</i> 11 <i>s.</i> 11 <i>d.</i></p>
Rye - - -	<p>Three Leasehold Cottages, subject to a Ground-rent of 13 <i>s.</i> 4 <i>d.</i> per annum.</p> <p>Cash received for Rent of 40 <i>s.</i> per annum from the Inmates (including last year's Balance of 19 <i>l.</i> 10 <i>s.</i> 9 <i>d.</i>), 25 <i>l.</i> 10 <i>s.</i> 9 <i>d.</i></p> <p>Cash paid for Ground-rent and Repairs, 4 <i>l.</i> 8 <i>s.</i> 8 <i>d.</i></p> <p>Balance in the hands of the Trustees, 21 <i>l.</i> 2 <i>s.</i> 1 <i>d.</i></p>
Boston - - -	<p>Nine Almshouses.</p> <p>Cash received for Rent from Inmates, 8 <i>l.</i></p> <p>Cash paid for Insurance, Water-rate, Repairs (including 1 <i>l.</i> 5 <i>s.</i> 7 <i>d.</i> due to Trustees for last year's Balance), 7 <i>l.</i> 16 <i>s.</i> 9 <i>d.</i></p> <p>Balance in the hands of the Trustees, 3 <i>s.</i> 3 <i>d.</i></p>
Scarborough - - -	<p>Sixty-seven Dwellings, or Buildings, called the Seamen's Hospital and Trinity House.</p> <p>Bequest of 837 <i>l.</i>, Three per Cent. Annuities.</p> <p>Cash received for Dividends, 25 <i>l.</i> 2 <i>s.</i> 8 <i>d.</i></p> <p>Cash paid to Inmates of the Houses, 16 <i>l.</i> 16 <i>s.</i>; Repairs, Insurance, and Expenses, 15 <i>l.</i> 14 <i>s.</i> 11 <i>d.</i>; Balance due to the Trustees last year, 88 <i>l.</i> 3 <i>s.</i> 9 <i>d.</i>;—together, 120 <i>l.</i> 14 <i>s.</i> 8 <i>d.</i></p> <p>Balance due to the Trustees, 95 <i>l.</i> 12 <i>s.</i></p>
Whitby - - -	<p>Fifty Tenements, called Seamen's Hospital Houses.</p> <p>Bequest of 300 <i>l.</i>, Three per Cent. Consols.</p> <p>Also, 180 <i>l.</i> 1 <i>s.</i> 2 <i>d.</i>, Three per Cent. Annuities.</p> <p>Cash received for Rent and Dividends, 17 <i>l.</i> 14 <i>s.</i> 3 <i>d.</i></p> <p>Cash paid, Insurance, Repairs, Coals distributed to Inmates, and Sundries, 8 <i>l.</i> 19 <i>s.</i> 2 <i>d.</i>; Balance due to the Trustees last year, 1 <i>l.</i> 15 <i>s.</i> 4 <i>d.</i>;—together, 10 <i>l.</i> 14 <i>s.</i> 6 <i>d.</i></p> <p>Balance in the hands of the Trustees, 6 <i>l.</i> 19 <i>s.</i> 9 <i>d.</i></p>
Liverpool - - -	<p>1,600 <i>l.</i> Bonds of the Dock Company of the Town of Liverpool, received from the Committee of the Nelson Fund.</p> <p>Cash received for Interest on Bonds (including 34 <i>l.</i> 6 <i>s.</i> 9 <i>d.</i> for last year's Balance) 102 <i>l.</i> 17 <i>s.</i> 8 <i>d.</i></p> <p>Cash paid to 12 Masters and 13 Widows, 74 <i>l.</i></p> <p>Balance in the hands of the Trustees, 28 <i>l.</i> 17 <i>s.</i> 8 <i>d.</i></p>

WAGES AND EFFECTS OF DECEASED SEAMEN.

ACCOUNT of the SUMS received, from the 1st January to the 31st December 1865, for the WAGES and EFFECTS of DECEASED SEAMEN, and of the PAYMENTS made for the same Period.

	£.	s.	d.
Balance in hand on 31st December 1864, as shown in the preceding Account -	65,125	2	6
Amount received in 1865 from the Masters of Vessels, and from the Collectors of Customs in the Colonies, and from Her Majesty's Consuls abroad, for Wages and Effects of 4,994 Deceased Seamen - - - - -	34,307	17	10
Interest received on 50,000 L. Exchequer Bills - - - - -	1,759	6	1
	101,192	6	5
Amount paid in 1865 to the Relatives and Representatives of 2,466 Deceased Seamen - - - - -	21,956	9	4
Amount unclaimed, received prior to 1st January 1859, paid into Her Majesty's Exchequer - - - - -	7,866	6	4
	29,822	15	8
BALANCE unclaimed on 31st December 1865 - - £.	71,369	10	9

Particulars of Balance, viz. :	£.	s.	d.
For Cash in the hands of Her Majesty's Paymaster General -	19,077	2	9
For Exchequer Bills - - - - -	50,000	-	-
For Advance, to be repaid from the Mercantile Marine Fund -	1,315	4	5
For Advance, to be repaid from the Vote for Relief of Distressed Seamen - - - - -	977	3	7
	71,369	10	9

Board of Trade, }
3 May 1866. }

H. R. Williams,
Accountant.

MERCHANT SEAMEN'S FUND.

ACCOUNT of the Receipt and Expenditure
under the SEAMEN'S FUND WINDING-UP ACT,
from 1 January to 31 December 1865; with an
Account of the Sums Received and Paid for
the Wages and Effects of Deceased Seamen in
the Year 1865.

(Pursuant to Acts 14 & 15 Vict. c. 102, s. 59, and
17 & 18 Vict. c. 104, s. 202.)

*Ordered, by The House of Commons, to be Printed,
7 May 1866.*

REPORT OF A COMMITTEE

APPOINTED

TO CONSIDER CERTAIN QUESTIONS

RELATING TO

THE METEOROLOGICAL DEPARTMENT OF THE BOARD OF TRADE.

Presented to both Houses of Parliament by Command of Her Majesty.



LONDON:
PRINTED BY GEORGE EDWARD EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY.

FOR HER MAJESTY'S STATIONERY OFFICE.

NOTE.

Upon the death of the late Admiral FitzRoy, a correspondence took place between the Board of Trade and the Royal Society, with respect to the Meteorological Department of the Board of Trade.* The result of that correspondence was the appointment of a Committee consisting of the following gentlemen, viz :—

FRANCIS GALTON, Esq., F.R.S., General Secretary of the British Association for the Advancement of Science, nominated by the President and Council of the Royal Society;

Staff-Commander EVANS, R.N., F.R.S., Chief Naval Assistant to the Hydrographer of the Admiralty, by the Admiralty;

T. H. FARRER, Esq., one of the Secretaries to the Board of Trade, by the Board of Trade;

To consider and report upon the following questions :—

1. What are the data, especially as regards Meteorological Observations at Sea, already collected by, and now existing in the Meteorological Department of the Board of Trade?
2. Whether any and what steps should be taken for arranging, tabulating, publishing, or otherwise making use of such data?
3. Whether it is desirable to continue Meteorological Observations at Sea, and, if so, to what extent, and in what manner?
4. Assuming that the system of Weather Telegraphy is to be continued, can the mode of carrying it on and publishing the results be improved?
5. What Staff will be necessary for the above purposes?

The following Pages contain their Report.

* See Appendix No. 1.

REPORT.

In order to give a satisfactory answer to the questions put to us, we have found it necessary to enter at some length into the history of the Meteorological Department of the Board of Trade, and into its original as compared with its present functions. The subject matter with which this Department has been connected naturally falls into two great divisions, corresponding with the change which has taken place in those functions, viz.,

- I. The Statistics of the Meteorology of the Ocean ; and
- II. The Prognostication of Weather in the British Isles, together with Observations of the changes of Weather within or near those limits, for the purpose of ascertaining the Laws upon which such Prognostications are or ought to be founded.

We have accordingly treated the first of these subjects in the First Part, and the second in the Second Part of our Report ; and we have in the Third Part given a statement of the means necessary to carry our recommendations into effect.

The Conclusion contains some remarks applicable to the whole subject.

PART I.

MEASURES TAKEN, OR TO BE TAKEN, FOR PROCURING METEOROLOGICAL STATISTICS OF THE OCEAN.

1. Origin of the Meteorological Department of the Board of Trade.
 2. Description of Original Functions of the Department, as laid down by the Royal Society, and adopted by the Government.
 3. Steps taken by the Department to obtain Meteorological Observations at Sea.
 4. Method adopted by the Department in extracting Observations.
 5. Criticism of this Method.
 6. Suggestion of a more complete Method of extracting Observations.
 7. Want of Estimate of Probable Precision.
 8. Estimate of Number of Observations required to determine the Meteorology of the Ocean.
 9. Description of the Publications actually issued, and of the Discussion of Observations now in progress, as compared with the desiderata of the Royal Society.
 10. Remarks on the form and character of the above Publications.
 11. Further use of the Meteorological Registers for purposes of Navigation.
 12. Recommendations for the future on the points discussed above, viz., as regards :—
 - (a.) The Works and Discussions of Observations now in progress.
 - (b.) The Collection of further Observations.
 - (c.) The method of extracting the Observations.
 - (d.) The method of discussing and tabulating the results of the Observations when extracted.
 - (e.) Publication of Meteorological Results.
 - (f.) Publication of other Results useful to Navigation.
-

PART II.

WEATHER TELEGRAPHY, FORETELLING WEATHER, AND OBSERVATIONS OF WEATHER WITHIN OR AFFECTING THE BRITISH ISLES.

13. Origin of the Practice of Telegraphing and Foretelling Weather.
14. Establishment of System of Telegraphing Weather.
15. Establishment of Storm Warnings and daily Forecasts of Weather.
16. Practice of the Department in foretelling Weather.
17. The practice not carried on according to any definite Rules.
18. The Maxims on which the Department acts not founded on any sufficient induction from facts.
19. Experience of the Office not utilized in reducing this Practice to a System.

20. Distinction between daily Forecasts and occasional Storm Warnings.
21. Comparison of daily Forecasts with the facts as observed by the Department.
22. Comparison of daily Forecasts with facts, observed elsewhere.
23. Comparison of daily Forecasts with each other, and with Storm Warnings.
24. Utility or inutility of daily Forecasts.
25. Conclusion concerning daily Forecasts of Weather.
26. Conclusions concerning Telegraphic Reports and Remarks.
27. Storm Warnings—The official Description and Explanation of them.
28. Inherent ambiguity of this Description.
29. Comparison of Storm Warnings with facts, as recorded by Meteorological Department.
30. Comparison of Storm Warnings with facts, as recorded by Wreck Department of Board of Trade.
31. Results of the comparison as regards Force of Wind.
32. Results of the Comparison as regards Direction of Wind.
33. Incompleteness of Data for Comparison.
34. Popularity and utility of Storm Warnings.
35. Conclusions as to Correctness and Utility of daily Forecasts and Storm Warnings.
36. Fishery Barometers.
37. Investigation of Laws which govern changes of Weather in the British Isles.
38. Recommendation of six stations with Self-recording Instruments.
39. Further Observations from Lighthouses, Ships, &c.
40. Discussion and Charting of arrears of British Weather.
41. Results to be looked for from the above.
42. Recommendations.

PART III.

ESTIMATE OF COST.

43. Cost of Existing Meteorological Department.
44. Recapitulation of Work to be done hereafter.
45. Means and Method of executing this Work.
 - a. Estimated Cost of this Work.
46. Reasons for proposed Increase of Expense.

CONCLUSION.

47. Answers to questions put to us.
48. Weather Changes in all parts of the World.
49. Periodical Revision.
50. Final Remarks.

PART I.—STEPS TAKEN OR TO BE TAKEN FOR PROCURING METEOROLOGICAL STATISTICS OF THE OCEAN.

1. *Origin of the Meteorological Department of the Board of Trade.*

In and before the year 1852,* the then Lieutenant Maury, acting under the sanction of the United States Government, had, by the help of the Navy and the Merchant ships of the United States, been for some time collecting Meteorological Observations made at sea. In 1852 Sir John Burgoyne, then Inspector General of Fortifications, contemplated the establishment of a certain number of Meteorological Observatories on land, to be managed by the Royal Engineers, and a suggestion was at his instance made to the United States Government that the observations so carried on, and any observations made under the direction of that Government should be conducted on one uniform plan. To this a counter proposition was made by the United States Government to the effect that any uniform system should include observations at sea, and that the different maritime nations of the world should be invited to make such observations on one uniform plan. This counter proposal was submitted by the British Government to the Royal Society;

* See Parliamentary Paper 115, Sess. 1853.

and it was finally determined,* in accordance with the report of Lieutenant Maury on his return, to postpone for the present the attempt to reduce to one uniform system the various Meteorological Observations by land, which different nations were then already making; but that it was desirable to invite the various maritime nations of the world to collect, through the medium of their National and Mercantile Navies, certain Meteorological Observations at sea, to discuss those observations, and to communicate the results to one another.

A conference consisting of representatives from different maritime countries subsequently met at Brussels, in August and September 1853.† This conference reported to the effect that it would be impracticable to obtain one great desideratum, viz., uniformity of scales and instruments, but they expressed a strong opinion that steps should be taken to secure the accuracy of the instruments that might be used. They describe those instruments as follows:—

A mercurial Barometer; Thermometers with dry and wet bulbs; also one with a black bulb; and an Hydrometer, or instrument for measuring the specific gravity of water.

Finally, the conference prepared a form of Meteorological Log or Register, with instructions for filling it up.

The Meteorological Department of the Board of Trade was subsequently constituted under the authority of Mr. Cardwell, then President of the Board, and the late Admiral FitzRoy was appointed as its head.

2. *Description of Original Functions of the Department as laid down by the Royal Society and adopted by the Government.*

In the meantime the President and Council of the Royal Society were informed, on June 15, 1854, by the Board of Trade, that it was proposed to establish a Department for the discussion of Meteorological Observations made at sea in all parts of the globe; and their opinion was asked as to the desiderata of Meteorological science to which that Department should direct its attention.

They replied in a letter‡ dated February 22, 1855. Its purport may shortly be stated as follows:—

1. That the usual monthly, quarterly, and annual Means of Barometric pressure, Aqueous Vapour, and Temperature, together with the Variability of each of them, should be ascertained and tabulated for suitable geographical spaces, comprised between specified meridians and parallels, and, in their aggregate, covering the entire ocean.

2. That the Temperature of the surface of the Sea, in different months of the year, should be carefully observed, as affording data of the utmost value to the study of Climatology as a science; also, that the Temperature, Direction, and Velocity of Ocean Currents, and their variations in different months and in different years, should be a prominent subject of inquiry.

3. That an examination should be made into the varying limits of the Trade winds and Monsoons.

4. That the fluctuations of Temperature on a large scale, such as might affect simultaneously great portions of the globe, should be investigated by a comparison of "Five-day Means," made at all *fixed* stations:

5. That charts of the Magnetic Variation should be constructed. (N.B.—This task was subsequently undertaken by the Hydrographic Department of the Admiralty, who published the required charts in 1858.)

6. That it would be desirable to make observations at the military stations of Gibraltar, Malta, Corfu, and on the coasts of Australia and New Zealand; and to make hourly observations for at least one year, at some station in the West Indies, to supply diurnal corrections for existing observations.

7. They further stated,§ in the course of subsequent correspondence, that one of the most important objects of the Meteorological Department, both in a practical and theoretical view, would be to procure statistics of the Direction and Force of the Wind, in those parts of the Atlantic Ocean which are most usually traversed by ships. They also remarked that it would be advisable to establish stations at the Azores, Madeira, Ber-

* See Parliamentary Paper 115, pp. 17 and 21.

† See Parliamentary Paper 4, Sess. 1854, with form of log annexed.

‡ Report of Meteorological Department, Board of Trade, 1857, p. 19; and Proceedings of Royal Society, 1855. This letter is so important that we have had it reprinted, with an extract from a subsequent letter, in the Appendix to this Report, No. 2.

§ Meteorological Department Report, 1857, p. 34, and Appendix to this Report, No. 2.

muda, Ascension, and St. Helena, for a continuous record of the Winds by means of self-recording instruments.*

The opinions expressed by the Royal Society were adopted by the Government, and may, therefore, be deemed to form the instructions under which the Meteorological Department was to pursue its labours. It will be observed that the great object steadily kept in view was the collection and subsequent discussion of facts and observations, too numerous to be collected and discussed by private persons. The publication in a form available to seamen of such results as might be immediately useful to them, would be a collateral duty, naturally arising out of the primary functions of the Office. There is no indication that it was a part of the functions of the Department as originally instituted, to publish undiscussed observations on the one hand, or to speculate on the theory of Meteorology on the other. Still less can it be considered to have been a part of those functions to attempt the prognostication of weather.

3. Steps taken by the Department to obtain Meteorological Observations at Sea.

When the Meteorological Department was first established, its Superintendent took active and efficient steps to give effect to the wishes of the Royal Society, by distributing information on the methods of observing, by procuring verified† instruments, by lending them with discrimination to the captains of Merchant ships and, with the co-operation of the Admiralty, by supplying the Royal Navy. All this was done on a liberal scale; more than 1,000 sets of instruments have been supplied to ships of the Royal Navy, as a part of their general equipment, and nearly the same number of sets have been lent to captains in the Merchant Service.‡ The gratifying result of these efforts was the receipt of 1,298 Registers, made during voyages that appear to average 140 days at sea, and therefore containing in the aggregate, (at the rate of three sets of observations a day, which is as many as the Department makes use of in obtaining the Meteorological means,§) about 550,000 separate sets of observations. The number of these Registers was steadily increasing, and would, no doubt, have been very much greater, if the attention of Admiral FitzRoy and of his Department had not become gradually diverted from the objects recommended by the Royal Society, to those belonging to a wholly different department of Meteorology, namely, the Prognostications of Weather. With the views thus entertained Admiral FitzRoy feared an accumulation of Ocean Statistics far beyond the divided powers of the Office to reduce; and he felt himself justified in ceasing to accumulate further contributions of Meteorological Observations taken at sea.||

So far as we can judge from a cursory inspection, the Registers that have been received by the Department have been made with much industry, and the large majority of them appear from that internal evidence which Meteorological Registers necessarily contain, to have been executed with scrupulous care and assiduity.¶ It has become evident to us, beyond all doubt, that not only the Royal Navy, but also the Merchant Service, contains an abundance of officers willing to make, and thoroughly capable of making, excellent Meteorological Observations at sea; and further, that the Department is already in possession of a large number of really valuable records for determining the Meteorology of the Ocean in the way specified by the Royal Society.

Moreover, the Meteorological Observations contained in the logs of the Royal Navy, especially those made in recent years, with instruments much more accurate and trustworthy than they had previously been, form a large and valuable store of Meteorological materials.**

We think that it would be a subject of legitimate regret if these observations were not turned to the fullest account, and if the further contribution of such similar data as

* We may add that, after the death of Admiral FitzRoy, further inquiries, dated May 26, 1865, were made of the Royal Society by the Board of Trade, and that the President and Council of the Royal Society stated in their reply that the objects specified in their previous letter are still as important for the interests of science as they were thought to be in 1854. See Proceedings of Royal Society, 1865. Letter from Royal Society to Board of Trade, dated 15th June, 1865, App. No. 1.

† "... the instruments used previous to 1855 were not duly compared with such standards as can now be referred to. This deficiency is unfortunately common to most of the meteorological observations one finds recorded anywhere, except at regular observatories, before the Kew Committee of the British Association undertook to recommend a barometer . . ."—*First Number of Meteor. Papers, Board of Trade*, p. 2.

‡ See Appendix to this Report, No. 3.

§ Unless any two observations in the same square have been made at least eight hours apart, only one of them is used in calculating means.

|| Report, 1862, p. v. § 18.

¶ See also Report, 1857, p. 57.

** A small part of these has been turned to account by the Meteorological Department in its charts of the Black Sea, showing the direction of its winds at different seasons.

may yet be needed in order to fulfil the desiderata of the Royal Society, were declined or discouraged.

We also think that no more time should be lost in collecting such further observations as may be needed; inasmuch as the longer the period of time over which the observations are spread, the more difficult will it be to make the results obtained from them useful hereafter in determining questions that may arise concerning Secular Variations (if any) in the Atmosphere. We think, therefore, that the distribution of registers and the loan of instruments should be proceeded with at once, and that this should be done on as wide a scale as is consistent with a due regard to economy and to the means which may exist for making use of the observations when made. According to the calculations given below,* about 1,100,000 observations will probably yet be needed before the materials necessary to fulfil the desiderata of the Royal Society are procured. But there are many parts of the ocean through which few ships go, whilst others lie in the most usual tracks. Care will therefore be necessary so to select the voyages and the places of observation, as to procure observations for those parts of the ocean which are for the time being not completed, and not to overload the Office with needless observations for those which are. Judgment and knowledge will also be required, so as to avoid unnecessary labour on those parts of the Ocean of which the Meteorological phenomena have been adequately observed and discussed through the efforts of Foreign Governments or Institutions.

In order to facilitate this selection, and also with the view of enabling the Department the more readily to deal with and refer to the observations, we suggest that each register should contain a small printed chart of the ocean divided into squares as explained under the following head, and that on this chart the voyage of the ship should be traced. This chart might be so constructed as to call the attention of the navigator intrusted with it to those squares in which observations are most needed. And from it a concise index might be made in the Department, containing a list of the squares, and a reference to each register containing observations for that square. From the absence of any such charts or indices, we are unable at the present moment to give any general statement showing for which of the squares (if any) sufficient observations have been obtained, for which of them the observations are deficient, and what is the extent of the deficiency.

4. *Method adopted by the Department in extracting Observations.*

We proceed to explain the method employed by the Department in extracting and handling the crude observations contained in the ships' Registers.

In the first place, the surface of the globe is divided into spaces as suggested by the Royal Society, ranging between 80° N. lat., and 70° S. lat., and bounded by each tenth meridian and tenth parallel. These spaces, in themselves of unequal areas, and of different shapes, were named "Ten-degree Squares;" because of their uniformly rectangular appearance in the charts drawn upon Mercator's projection, which are those employed by navigators. Each of the "Ten-degree Squares" has received a special number. For instance, the Square 303 embraces the space included between the equator and 10° S. latitude, and between 30° and 40° W. longitude. Again, every one of the "Ten-degree Squares" admits of a quarterly subdivision into smaller squares of Five degrees. These are distinguished by the letters *a, b, c, d*. Thus, 303 *a*, is the north-easterly quarter of the above-mentioned Square. Lastly, in some rare cases, a further subdivision has been provided for by an extension of the same principle of lettering.

Fixing our attention, for the present, on the "Ten-degree Squares," it appears, from a chart we annex,† that when those are omitted which are occupied by land or by ice, there do not remain more than 330 with which the Meteorological Department would have to deal. This number must be accepted as approximate, because many squares are partly occupied by land and partly by sea, and a somewhat arbitrary division has in those cases to be made between them.

In the second place, every observation has to be copied out of the Registers‡ and sorted on some determinate plan, into those of the 330 Ten-degree Squares to which they severally belong. We may here observe, that when this is done, and not before then, the labour of their discussion admits of comparison with that of the same number of observations, received from a similar number of land stations.

The method adopted by the Department§ in extracting the several classes of observations from the Registers and appropriating them to their several Squares is, speaking generally, as follows.|| Each class of observation is taken out separately, and every

* See p. 11.

† For the form of Register, see Report, 1857, p. 74.

‡ See Appendix, No. 4.

§ Report, 1857, pp. 41-55.

We say "generally," because the methods employed for different classes of observations differ considerably among themselves, and the practice of the Office has also varied a little from time to time. But it would be impossible to enter into fuller particulars without much and unnecessary tediousness.

Register that is likely to include any part of the particular Sea under discussion is searched for the particular class of observation under consideration; and for every observation that is taken out of it, the Ship's Name or Number, the Date, and, in some cases, the Latitude and Longitude, have to be appended to the observation. All this is copied into a page headed by the number of a Five-degree Square, and contained in a book assigned to the subject under discussion. Thus Admiral FitzRoy writes in 1857,* "At present there are in use about 60 collecting books of tabular Forms, called Data Books, appropriated to the following subjects:—namely, Barometer, Thermometer, Hydrometer, Winds, Weather, Currents, Variation, Soundings, Crossings, Passages, Storms, Ice, Shooting Stars and Meteors, Aurora, and Electricity." The process just described, is distinguished in the Department by the term "collecting." The next step consists in re-copying the observations thus collected into separate sheets, each of which is devoted to a particular month; no other facts being entered, except the Ship's Name or Number, and the date of observation. This is called "grouping" the observations.

5. *Criticism of this Method.*

With the experience now gained of this mode of analysis, we think that the present method of dealing with the Registers is capable of considerable improvement.

That it is the cause of Loss of Time, Inconvenience, and even of Error, appears clearly from the following considerations:—

1st, as regards Loss of Time.

Though a great deal of time has been given to "collecting" the Observations, yet no Register has ever yet been more than partially examined. Each search has been directed towards some limited object, and a great deal of labour has been spent in going over and over again the same voluminous records, in order to extract from them different classes of observations.

Again, the Ship's Number, the Date, and; in some cases, the Latitude and Longitude, have to be copied afresh for every observation in each set, instead of having to be copied, once for all, for the entire set. Referring to the forms given in the Report for 1857, pp. 43–47, it will be seen that about as many figures and letters are employed, on the average, upon the mere Accessories to the Observations, as upon the Observations themselves. If these Accessories were annexed (as in the way we are about to propose) once for all, to the entire set, much of that labour would be saved.

2dly, as regards Inconvenience.

When the observations have been "collected" for a particular inquiry, it is almost impossible to make use of them should any variation or extension of the inquiry prove to be requisite. Thus, there are now sufficient data in the Collection Book for Winds, to determine with approximate accuracy the usual winds that blow in each Five-degree Square; but as no latitudes or longitudes are recorded in the pages of that Collection Book, the observations that refer to these matters are undetermined as to locality, and may have been made at numerous points very distant from each other. They may have been made anywhere in a Square of Five degrees of latitude, or 300 nautical miles in length. If it were desired to make inquiry into the limits of the Trade Winds or Monsoons in any one of those Squares, it would be necessary, according to the system adopted by the Department, to search all the registers afresh, and to establish a Collection Book for that particular purpose.

Again, when it was thought advisable to inquire into the Variation of the Barometer in the high latitudes of the Southern hemisphere, a very large number of barometric observations was "collected" for Zones of five degrees in width. The labour devoted to this collection is valueless towards sorting the barometric observations into the several Squares that compose these Zones. Therefore that additional inquiry, a very small but important matter in itself, must be undertaken wholly afresh, and on its own basis. It would be easy to add many similar instances to show the inconveniences of the present system.

3rdly, as regards the Errors introduced.

That errors really exist, is manifest by an inspection of the "Wind roses" of the published charts, whose singularly irregular shape, in many cases, almost compels us to admit either that no law governs the caprices of the wind, or that the Wind Observations have been discussed on an erroneous principle.

There appear to be two defects in principle, which are sufficient to produce numerous Errors in the results.

First, as we have just mentioned, no record usually appears of the Latitude and Longitude in the Collected Observations; consequently all observations contained within the same Square are discussed on equal terms, though they may have been taken at

* Report, 1857, p. 12.

opposite extremes of a large area, and may belong to entirely different meteorological systems. These cannot be disentangled and sorted into groups, under the present method. As an example, we may state that it is impossible to sort to one side the observations that refer to the influence of a Monsoon, or to that of a Land and Sea Breeze, or to the Temperature of the air as modified by an Ocean Current, or to the several Ocean Currents that run side by side in the same Square. It is also impossible to separate the direction of the Wind during one part of a month, whilst a Monsoon prevailed, from the direction of the Wind during the other part of the month, when the Monsoon was absent.

Secondly, neither in the collected observations, nor consequently in the grouped ones, does any record appear of the degree of Merit of the Register from which each separate observation is taken, whether it is "excellent," "very good," "good," or "ordinary."* It is important that these distinctions should be borne in mind, especially when discussing observations that show some disagreement between themselves. It is all important when inquiring into Ocean Currents, where observations are valueless unless both the Latitude and Longitude, as determined by astronomical observations, and by the Dead Reckoning, are laid down with frequency and precision. Even observations of the Thermometer, Wet and Dry, are of little value, unless made with intelligent care. But under the system adopted by the Department, the records of the best observers are treated with no more consideration than those of the least qualified; and a group of good observations is liable to be swamped by the introduction, on equal terms, of a larger group of inferior observations. In short, it does not appear to have been the practice to "weight" the observations, or to keep any record by which they can be weighted. In a Square we examined for the purpose, 487 c, we found this omission to have a prejudicial effect even on the averages of the Winds. In the Five-degree Square to which we have referred, there were 127 Board of Trade observations of the wind, and 427 others extracted from Maury's charts.† The results of the Board of Trade observations gave a "Wind Rose" bounded by points that, after the averages of adjacent observations had been taken, fell naturally into a continuous curve, and therefore had a *prima facie* appearance of truth. This was increased almost to a certainty, by finding that the observations when divided at haphazard, still gave rise to the same appearance, though with inferior regularity. On the other hand, Maury's 427 observations resulted in a much less regular figure, and therefore, though nearly four times as numerous as those of the Board of Trade, had not in their aggregate so high a value as the latter. If this is the case with Winds, which all Sailors observe with moderate exactness, much more would it have been the case with Ocean Currents upon which only the most experienced navigators are capable of forming a thoroughly trustworthy opinion. There can be no doubt that in combining observations of unequal merit, the different observations should be very differently weighted.

To resume. The objections we entertain against the present system of extracting Observations from the Registers, may be shortly stated as follows:—

No Register is ever exhausted.

Labour is lost in repeatedly searching the same pages for different items.

The entries of Ship's Name or Number; of the Latitude and Longitude; and of other mere Accessories to the Observations, are unnecessarily repeated.

The Collection Books do not give sufficient data, even as regards their own particular subject, when accurate inquiries are needed.

No data are afforded for "weighting" the Observations.

6. *Suggestion of a more complete Method of Extracting Observations.*

Looking to the experience gained, we think that the following plan will be free from the above objections, and will facilitate the object in view; viz. :—

First, to examine each Register, and to assign to it some letter or other sign, to indicate its general Meteorological character and value; to mark out the Observations referring to those Squares for which Observations are still wanted; to underline the remarks that require copying; and to calculate and insert the corrected height of the Barometer in red ink.

Secondly, to copy out each set of Observations, with all its Accessories, into a schedule printed on a thin Card or piece of tough paper, as shown below. Every log will thus be gone through in regular order, and will be exhausted of those parts of its contents which are necessary to determine the Meteorological Means. It may then be kept and dealt with in such manner as may be expedient for the other purposes mentioned below.‡

* See Report, 1857, pp. 13 and 57, for the use of these terms.

† See p. 13 for explanation of this process.

‡ See page 15.

Thirdly, to sort the Cards into boxes or pigeon holes, each devoted to a particular sub-division of a particular Square, so that on going to any one of them, everything which is known about that sub-division of the Square will be found in it. The cards should be further arranged in the pigeon holes, according to Months.

Fourthly, to select a Sub-division of a Square, to examine each of its Months seriatim, and to discuss separately in each month the Barometer, Thermometer, and other elements. The Cards of the month should be sorted into groups according to the "Weights" to be attached to the observations written on them, and into sub-groups according to the Hour on which they were made. Then the observations in each sub-group should be added together, the Sums should be multiplied by the Weights, and the diurnal Corrections applied; and, lastly, the Mean of the whole should be taken.

It will be observed that the mobility of the contents of the boxes or pigeon holes would lend a most important aid in disentangling the observations; and all the more so in those instances where further, and perhaps tentative sub-divisions of the groups would become essential.

Let us consider some of the cases we have already noticed. Suppose we wish to ascertain the Limits of the Trade winds in a particular Square: we should sort the Cards into two groups, one in which the Trade winds were present, the other in which they were absent. We should further sub-divide the groups, just as we pleased, according to months or years, to obtain the required deductions as to the variability of their limits, at different epochs. Disputed Currents running in narrow belts, could be inquired into with perfect ease, by sorting out all the Observations that related to the belt in question, from the rest that referred to other parts of the Square, and in case they should be found to disagree, by neglecting those among them that did not bear a mark of meritorious character, and by carefully weighting the rest.

So, again, if a Monsoon or Trade wind blew during part of a month, or over one part of a square, it would be perfectly easy to separate the Observations that referred to the Monsoon, from those that did not. In short, the Observations could be handled, grouped, and discussed with perfect ease under any form that each new requirement might make necessary.

It is probable that 200 Observations* for each month of the year, in each Five-degree Square, would be as many as would in any case be required to give a moderately accurate result, and 200 separate Cards form a pack of no unmanageable size.

We append a specimen of a complete copy of a set of observations on the principle we recommend. If it were cut out, it would be ready in its present form to be sorted into the box or pigeon hole belonging to its Square.†

Date, 1868	Month.	Day.	Hour.
	June	15	Noon.
Ship	Name	Princess Royal.	Register value.
	No.	1753.	Good.
Latitude	D.R.	6° 17' N.	No. of Square.
	Obs.	6° 17' N.	3
Longitude	D.R.	25° 56' W.	Sub-division of Square.
	Obs.	26° 05' W.	d.
CURRENTS	Direction	N. 73° W.	Sea Temp.
	Daily Rate	22'	80½
MAGNETIC VARIATION		1° 41' W.	Ship's Head
by Standard Compass			S. by E.
WINDS—Direction		S.S.E.	Force
			5
BAROMETER	Corrected	inches.	Weather
	Height	30.07	b. c. p.
THERMOMETER—Dry	81°	Wet 77°	Tension of Vapour
			08.7
CLOUDS—Form	Cum Str.	Amount 5	Upper Direction
			N. W.
REMARKS.			
Passed through strong tide rips at 11 a.m.			
Waterspout on horizon at 11½ a.m.			

* See page 11.

† The Schedule should be printed, not as it is necessarily printed here in black ink, but in coloured ink (say blue) in order to give greater prominence to the entries.

The complete entry consists of about 70 letters and figures, of which the Name or the Number of the Ship and the character of its Register might be printed. A few words would be occasionally required in the Remarks.

7. *Want of Estimate of Probable Precision.*

There is another point in the method of discussing observations adopted by the Department, to which we desire to call attention; viz., that the probable degree of Precision of the results that have been arrived at is nowhere shown, and that no provision has been made to determine it. It is hardly necessary to remark that the calculation of the "Probable Precision" is a well-known application of the law of probabilities, widely employed in all branches of physical science. Its determination in an approximate form is as important to the ordinary Navigator as it is to the Meteorologist, and it is even essential to the sound practical working of the Department. For when the Precision of the results obtained for any particular Square appears to be great, the Navigator can accept what is published as being thoroughly worthy of reliance, and further inquiry concerning the Meteorological Means of that Square becomes needless. When the so-called "Probable Precision" is moderate, the results are proportionately approximate, and whether those results appear in tables or on charts, they ought undoubtedly to bear on their face a clear indication of the fact. And the collection of materials referring to that Square should be continued. Lastly, when the Probable Precision is very small, the results would not be worthy of publication.

We may here remark that the importance of a clear understanding of the degree of Precision to be aimed at, lies at the root of all estimates of past and future work. If no attempt is made to calculate the degree of Probable Precision, it is impossible to tell what value to place on the results of past work. If minute and fanciful accuracy be sought in the future work, the labour of obtaining it on a large scale would be altogether overpowering, for the Precision of the result is increased, not in proportion to the Number of observations employed, but to the Square Root of their number. If it requires 200 observations to make it probable that the thermometric mean lies within 1° from the truth, it would require, not 4 times, but 4×4 times, that number, or no less than 3,200 observations to increase the Probable Precision to one-fourth of a degree. As a provisional estimate of the highest useful degree of precision, we would suggest that the Probable Precision of the Monthly Means of the Wind's Direction in each Five-degree Square need not be raised to more than two Points; nor that of the height of the Thermometer to more than 1° , nor that of the Barometer to more than $\frac{1}{20}$ th of an inch.

8. *Estimate of Number of Observations required to determine the Meteorology of the Ocean.*

We are unable to estimate accurately the number of observations that would, on an average, be required to give results of the degree of precision we have just described, for each Five-degree Square. The requirements of the most variable climate would not probably exceed 200 observations for each quarterly division of each Ten-degree Square in each of the 12 months. That is to say, in a variable climate ($4 \times 200 \times 12$, or) about 10,000 observations in each of the 330 Ten-degree Squares, would be required to supply the necessary material for determining its Meteorological Means. A far smaller number would be needed in Squares situated between the tropics, where the climate is usually exceedingly regular in its changes. A hundred or even fewer observations in those latitudes would give, on an average, a result of greater precision than 200 under the former circumstances. No doubt there are many Ten-degree Squares whose Meteorological systems are so uniform that it would be unnecessary to subdivide them. In these cases, 100 observations in each month, or 12,000 observations altogether for the whole Ten-degree Square, would be sufficient.

Under these circumstances, and considering also that much work has already been effected by foreign Governments and by private individuals, we think we may be justified in provisionally assuming that 100 observations in each month in every Five-degree Square, or 5,000 observations altogether in every one of the 330 Ten-degree Squares would represent the average number with which the Department would have to deal, before its work is complete. This calculation results in a grand total of 1,650,000 observations to be collected and discussed. Perhaps one-third of them are to be found in the registers now in possession of the Board of Trade, but for the reasons mentioned above,* we are unable to speak of this proportion with certainty.

* See page 7.

9. *Description of the Publications actually issued and of the Discussion of Observations now in progress, as compared with the desiderata of the Royal Society.*

We now proceed to give a statement of the work that the Department has actually accomplished in discussing observations, and in publishing the results.

As regards the desiderata of the Royal Society, mentioned above,* and numbered 1, 2, 3, and 7, relating to Barometric Pressure, Aqueous Vapour, and Temperature of the Atmosphere, to the Temperature of the Surface of the Sea, and the Temperature, Direction, and Velocity of Ocean Currents, and to the limits of the Trade Winds and Monsoons, a very small portion has been completed; about one-half of the discussions of the observations relating to these subjects have been commenced, and are in various stages of progress. We think it may be assumed, subject to the general remarks made above concerning this work, that less than one-fourth of it has been done. The following Tables and Lists will perhaps more clearly set forth the several details than a generalized statement.

The discussion of observations necessary to satisfy the desideratum numbered 4, "the *five-day means* of Temperature at *fixed* stations," has not been commenced. We observe that this was considered by the Royal Society a matter of special importance, and we have referred to it specially below.†

The desideratum numbered 5, concerning Magnetic Variation, has, as above stated, been fulfilled by the Hydrographer of the Admiralty.

The desideratum numbered 6, relating to observations at certain stations in the colonies, has not been commenced.

TABLE SHOWING THE PROGRESS MADE IN COMPILING AND PUBLISHING THE METEOROLOGICAL ANNUAL, QUARTERLY, AND MONTHLY MEANS OF THE 330 TEN-DEGREE SQUARES WHICH COVER THE ACCESSIBLE PARTS OF THE OCEAN.

Subject.		Published.	Ready for Publication.	"Collected" and "Grouped,"† or in process of "Grouping."		"Collected,"† or in process of Collection.	
		No. of Squares.	No. of Squares.	No. of Squares.	Estimated Progress.	No. of Squares.	Estimated Progress.
Winds - - -	{ Annual -	—	—	—	—	} 290	$\frac{1}{10}$
	{ Quarterly -	<i>a</i> 200	—	48	$\frac{3}{4}$		
	{ Monthly -	<i>b</i> 23	<i>b</i> 17	<i>b</i> 210	$\frac{1}{4}$		
Barometer - -	{ Annual -	<i>c</i> 72	—	—	—	} 270	$\frac{1}{10}$
	{ Quarterly -	—	—	—	—		
	{ Monthly -	<i>c</i> 96	—	137	$\frac{3}{4}$		
Thermometer - [Dry and Wet.]	{ Annual -	—	—	—	—	} 268	$\frac{1}{8}$
	{ Quarterly -	—	—	—	—		
	{ Monthly -	—	—	143	$\frac{3}{4}$		
Temperature of Sea -	{ Annual -	330	—	—	—	} 286	$\frac{1}{10}$
	{ Quarterly -	23	—	—	—		
	{ Monthly -	—	—	71	$\frac{1}{8}$		
Ocean Currents -	{ Annual -	—	—	—	—	} 260	$\frac{1}{3}$
	{ Quarterly -	24	—	—	—		
	{ Monthly -	—	—	56	$\frac{3}{4}$		
Specific Gravity -	{ Annual -	325	—	—	—	} —	—
	{ Quarterly -	—	—	—	—		
	{ Monthly -	—	—	—	—		

a { Direction of wind only.
Converted from Maury.

b { Direction and force.
Maury and Board of Trade combined.

c In zones of 5 degrees.

* See p. 5.

† See p. 42.

‡ For the meaning of the words Collected and Grouped, see above, pp. 7, 8.

LIST OF WIND CHARTS PUBLISHED.

North Atlantic Ocean	-	-	10° squares.	Quarterly	Converted from Maury's Wind Charts.* Direction alone given.
South Atlantic Ocean	-	-	"	"	
Brazil (coast of)	-	In Squares of	$\left\{ \begin{array}{l} 4^{\circ} \text{ Lat.} \\ 2^{\circ} \text{ Long.} \end{array} \right\}$	"	
Cape Horn (East)	}	In Squares of	$\left\{ \begin{array}{l} 2^{\circ} \text{ Lat.} \\ 4^{\circ} \text{ Long.} \end{array} \right\}$	"	
" (West)			"	"	
North Pacific Ocean (East)	-	-	10° squares.	"	
"	-	Western part	"	"	
"	-	Central part	"	"	
Central America	-	-	"	"	
Indian Ocean (North)	-	-	"	"	
" (South)	-	-	"	"	
Africa, S. and E. coasts	-	-	"	"	

Trade-Wind Charts, for North and South Atlantic Oceans, published in 2° squares, monthly, with per-centage of Calms and Rains.

CHARTS EMBRACING THE FOLLOWING OCEAN STATISTICS, VIZ.:—CURRENTS, SEA TEMPERATURE, PREVALENCE OF RAIN, MAGNETIC VARIATION AND DIP, WIND (DIRECTION AND FORCE).†

16 in No. {	North Atlantic Ocean (from Equator to 40° N. Lat.)	5° squares for months.	{ February. May. August. November.
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CHARTS OF MISCELLANEOUS CHARACTER PUBLISHED.

1 Chart of Black Sea. Winds (direction and force), Currents. Quarterly.

" Balacava Storm of 1854. Winds (direction and force). Barometer.

Published in No. I. of Meteorological Papers.

Synoptic Charts of Royal Charter gale, 1859, contained in an Atlas accompanying No. X. of Meteorological Papers. The gales also of January 19, December 1, 2, 3, 4, 1863, published in Report of 1864.

SPECIFIC GRAVITY OF OCEAN AND SEA TEMPERATURES.

Mean *Annual* values in 10° squares. These have been "*collected*" independently of month of observation. Extremes and remarks for each ocean are given and diagrams appended. The sea temperatures were collected with specific gravity, for the purpose alone of applying temperature and corrections.

Published in No. XII. Meteorological Papers.

INTERTROPICAL DIURNAL RANGE TABLES OF THE BAROMETER.

English and Dutch observations combined, with a view of obtaining an *approximate* value or correction for Barometrical Observations made on board any ship crossing the Equator in the Atlantic and Indian Oceans.

Published in No. VII. of Meteorological Papers.

BAROMETRIC MEANS, FOR HIGH NORTH AND SOUTH LATITUDES.

"*Collected*" for zones of 5° parallels, and for the special purpose of ascertaining without delay, whether Barometric pressure diminishes in high latitudes rapidly and uniformly.

Published in No. XIV. Meteorological Papers.

* We refer to the charts published by the American Bureau of Hydrography, when under the supervision of Commander Maury. That zealous and indefatigable officer, eager to give with the smallest possible delay some usefully approximate knowledge of the meteorology of the ocean, especially of its winds and currents, collected an enormous number of observations from the best sources then accessible to him, and combined them on his charts. His material is more than four times as extensive as that contained in the Registers of our own Meteorological Department, but it is compiled in a form so puzzling and intricate as to be scarcely intelligible to an ordinary navigator. According to one part of Maury's system, the course of every ship was laid down upon the published chart, and the direction of the wind marked upon that course at each observation. The charts are printed in colours, different colours being ascribed to the different quarters of the year, and the months of each quarter are distinguished by other devices. The result is unhappily very perplexing. The face of the charts is overlaid with meshes of interlacing lines in extraordinary number, so as to resemble entangled skeins of many-coloured threads. Admiral FitzRoy treated these charts as a vast repertory of original observations. He was anxious to publish charts without delay that should be of use to the practical seaman, by showing the prevailing winds at sea during different seasons of the year, and Maury's observations were ready at hand for the purpose. He therefore devoted a large part of the earlier efforts of the Department to the "conversion" of Maury's charts into another form; but in doing so, some part of their value was lost. The latitude and longitude of each of Maury's observations are shown in his maps by the place in which the observation is protracted. These are omitted in the "conversions" of the Department. He simply extracted the observations out of each Five Degree Square, and combined them quite irrespectively of their position in it, or of any other consideration whatever. The charts that are founded upon Maury are, therefore, liable to the objections we have already urged against the system of collecting and grouping employed by the Department, in respect to its own Registers. The comparatively scanty, though far more carefully selected observations of the British Marine, were simply combined with Maury's materials; and, therefore, an imperfect rendering of Maury's charts must be considered as the basis of the great majority of the Wind Charts published by the Meteorological Department of the Board of Trade.

† In this series of Charts, Maury's Wind observations are combined with those from Board of Trade Registers. As to Maury's Charts, see note above.

ICEBERGS IN SOUTHERN HEMISPHERE.

Compiled from the papers of Mr. J. T. Towson, of Liverpool, 1855-9, various other authorities, and from about one-half of the Board of Trade Registers. Charts appended.

Published in No. XII. Meteorological Papers.

LAND OBSERVATIONS (UNDER HEADS 6 AND 7, OF ROYAL SOCIETY'S REQUIREMENTS).

These are contained in Nos. I., IV., and V. of the Meteorological Papers. They refer to the following stations, and were made for the annexed periods:—

No. of the Meteorological Paper in which published.			Period embraced by the Register.	
			Years.	Months.
V.	Orkney	{ All Elements - - - - -	- 22	—
		{ Wind and Thermometer - - - - -	- 33	—
	The necessary observations for correcting the barometer have been generally omitted. The winds are referred to only 8 points of the compass.			
I.	Cape of Good Hope.	Results from Meteorological observations made between Jan. 1842 and Jan. 1856	- 14	—
V.	Decima, in Japan	- - - - -	- 7	—
	Thermometer observations only.			
V.	Papiete, in Tahiti	- - - - -	- 5	—
	A summary for each of the five years.			
I.	New Zealand.	The meteorology of, based on observations made by Capt. Drury, R.N.	- 4	—
I.	Valparaiso	- - - - -	- 3	—
	No summary of the three years.			
I.	Bermuda	- - - - -	- 2	—
I.	Halifax	- - - - -	- 2	—
I.	Ascension	- - - - -	- 2	—
IV.	Arctic Seas, Register of the "Fox"	- - - - -	- 2	—
	Reprint of the <i>Noon</i> observations only, with preface, monthly summary of Temperature, Barometric pressure; Ice; Auroræ, &c.			
V.	Ekukanyeni, in Natal	- - - - -	- 1	3
	Summary for each month, and for the year 1858 given.			
I.	Ceylon. Point de Galle	- - - - -	- 1	—
	Winds and rain observed.			
I.	" Trincomalee	- - - - -	- 1	—
I.	" Columbo	- - - - -	- —	—
	Winds and rain observed.			
V.	Oratava, in Teneriffe	- - - - -	- 1	—
	A reprint of the Register. The observations were taken at irregular hours. No summary or discussion.			
V.	Maritzburg, in Natal	- - - - -	- 0	9
	(In continuation of those made at Ekukanyeni.)			
I.	Caledonia Bay, Isthmus of Darien	- - - - -	- 0	2
	Reprint of a Register. A brief summary annexed.			
I.	Cartagena, New Grenada	- - - - -	- 0	2
	Reprint of a Register. A brief summary annexed.			

ANEMOMETRY.

XIII.	Halifax	- - - - -	- 2	0
VIII.	Bermuda	- - - - -	- 1	6

These have been discussed with minuteness and in a complete manner.

10. *Remarks on the form and character of the above Publications.*

Upon the papers above described we have to observe that, whilst they evince much industry, they appear to have been selected and published without any plan; that original observations and fragmentary and miscellaneous papers on detached subjects form a large part of these publications; and that where the observations have been discussed no uniform method of tabulating the results has been adopted. Indeed it is stated in the Preface to the first Number of the Meteorological Papers, that the observations printed in the volume are "mere fragments; sufficient, perhaps, to encourage observers, and induce them to send ampler records (in confidence of appreciation), and enough to show what is required." Similar views appear to have prevailed in many of the subsequent publications.

We do not think it desirable that such a mode of publication should be continued. Special facts, of immediate interest to mariners, such as the discovery of a new shoal, may properly be the subject of a special notice or advertisement, such as are now issued of facts of a like nature by the Hydrographer of the Admiralty. And these facts,

as well as others of immediate practical value, may properly be incorporated with and published in charts. These, however, are matters for the Hydrographical Office. The publications of any Meteorological Department ought, we think, to be made upon some well considered and uniform plan. They should not, except in the most special cases, include original observations, or Meteorological Registers in extenso, and if it is necessary to do so, a summary of the results should be appended. They should generally, if not exclusively, be confined to results so carefully digested as to be easily understood and readily handled. These results, consisting in the main of the Means of Barometric Pressure, Vapour Tension, Temperature, and Wind, together with the Variability of each of them, should be tabulated on one uniform and well considered system.

It is, in our opinion, impossible to exaggerate the importance of this object.

11. *Further use of the Meteorological Registers for purposes of Navigation.*

In the foregoing observations and suggestions we have borne in view that which was the principal object of the Royal Society in the letter above referred to, viz., the collection and discussion of meteorological statistics of the ocean, on principles well known to and universally practised by meteorologists.

It is to facts thus observed and discussed that we must look for the advancement of scientific knowledge, and, through the medium of such knowledge, for results useful to the navigator. But we have not overlooked the fact that in addition to the ultimate results to be thus obtained, the Royal Society and the Government, at the time the Meteorological Department was established, contemplated the possibility of results more immediately useful to navigation, and that such results were in effect one of the chief objects which Maury, to whom so much praise is due for originating the project, had constantly in view. We agree that these objects should not be lost sight of.

The Meteorological Registers frequently contain information which may be turned to the immediate account of navigation, *e. g.*, notices of rocks, shoals, icebergs, &c., in the column headed Remarks; minute information concerning local currents or other incidents of special interest to navigation in particular localities; and, if regarded as a whole, evidence concerning the best and shortest routes for various voyages. As, however, the results to be thus obtained vary with the wants of navigation, and with the state of hydrographical knowledge for the time being, we forbear attempting to define them, or to prescribe any definite course in extracting and publishing them. It is, however, clear that nautical experience and hydrographical skill will be necessary in directing such labours.

Whether a special officer shall be appointed for this purpose, whether, if so, he should be connected with the Board of Trade, or, as is more likely to be desirable, with the Hydrographic Office, will be a matter for consideration in organizing the system. Whatever plan be adopted we think it desirable that the Registers should be in the first instance discussed for the purpose of estimating the Meteorological Means, and that they should afterwards be made use of for the more immediately practical purposes mentioned above. If in the former discussion it should appear that there is on any special Register a fact of immediate interest to the Hydrographer that fact or that Register may be at once sent to him. But we think it of great importance that the regular work of extracting the Meteorological Means should henceforth go on regularly and without interruption. This need in no way interfere with our further conclusion, that knowledge which is obtained through the medium of the observations of sailors, and which is capable of being utilized for their benefit, should be so utilized as soon as possible, and that they should feel a confidence that it is so utilized.

12. *Recommendations for the Future on the Points discussed above.*

We have now to offer our recommendations seriatim concerning the various points referred to above, taking them in the order into which they seem naturally to fall rather than in that in which we have above discussed them.

(a.) *As regards the Works and Discussions of Observations now in progress.*

We recommend that the following use should be made of the results already obtained by the Meteorological Department, and now remaining in MSS.

Winds.—The nearly completed work referring to the South Pacific, to be finished, and a series of charts printed from it, corresponding in every respect to those already published of the North Pacific.

[The Department will then have issued wind charts for the whole Ocean, and for each quarter of the year.]

The Trade Winds and Monsoons for the Indian and Pacific Oceans to be extracted and charted, and to be published under the same form as those already published for the Atlantic Ocean.

All the Collection papers that refer to Winds, their Direction or Force, to be bound up into volumes, referring to separate Oceans. The arrangement to be methodical; a preface to contain a full description of the principle on which they have been made and of the order of their contents, and generally speaking, the volume to be prepared in such a way as to be self-contained, and perfectly convenient for future reference.

The same to be done with the Grouping papers.

Further work under this head, on the present system, to be discontinued.

Ocean Currents.—The Collections so far as they are at this moment completed, to be bound into volumes, on exactly the same principle as recommended for the winds.

The same to be done for the Grouping papers.

Further work under this head, on the present system, to be discontinued.

Sea Temperature.—The Collection to be completed in North and South Atlantic, but not to be grouped.

Then all the collections to be bound into volumes as above.

The same to be done for the existing Grouping papers.

Further work under this head, on the present system, to be discontinued.

Temperature of the Air.—The results already obtained to be submitted to revision, and such of them as appear worthy of publication to be printed and published in the form of Tables,* containing the Mean readings of the Thermometer and the Number of observations, for every Month and for every Five-degree square.

Both Collections and Groupings to be bound as above.

Further work under this head, on the present system, to be discontinued.

Vapour Tension.—The results of the Wet bulb thermometer as already obtained, to be treated in the same way, and incorporated in the same Table with the Temperature of the Air. Also the Vapour Tension, as obtained from a comparison of the monthly means of the Wet and Dry bulbs to be added to them.

Both Collections and Groupings to be bound as above.

Further work under this head, on the present system, to be discontinued.

Barometric Pressure.—The results already obtained to be treated on exactly the same method as the Temperature of the Air and the Vapour Tension. The results to be incorporated in the same Tables.

Both Collections and Groupings to be bound as above.

Further work under this head, on the present system, to be discontinued.

The result of our recommendations will be to complete and publish whatever results of value are near their completion, as well as to publish those series which are complete. We then propose to discontinue the present system of discussing observations; but to put the remainder of the work of Collecting and Grouping which has been already done into a convenient form for the immediate wants of the Hydrographical Department of the Admiralty in making and correcting charts; and also for ulterior use in calculating the Meteorological Means.

(b.) *As regards the Collection of further Observations.*

We recommend that the issue of Meteorological Registers and the loan of Instruments should be re-commenced and carried on as rapidly and widely as is consistent with considerations of expense and convenience. The work will not be complete until there are the necessary number of observations, say 5,000 on the average, for each of the 330 Squares into which the Ocean is divided.† But since, as we have said, there are some of these Squares into which few ships go, and some parts of the Ocean for which foreign observers may have done all that is necessary, discretion will have to be exercised in issuing the Registers, so as to obtain materials for the Squares which are not complete, and so as not to overload the Office with unnecessary material in respect of those which are. We further recommend that a Chart be annexed to each Register, showing the track of the Ship through the Squares; and that an Index be kept in the Office referring, under the head of each Square, to each Register containing observations relating to that Square.

(c.) *As regards the method of extracting the Observations.*

We recommend that this should be done in the manner we have suggested above.‡ And we recommend that this shall be done for all the Registers in the Office, whether

* See Appendix, No. 5, for a suggested form of such Tables.

† i. e., about 1,650,000 in all, including the 550,000 already obtained.

‡ See pp. 9, 10.

they have been already partially extracted or not. We believe that what we recommend would not exceed the labour of completing what remains to be done according to the present system. We do not think that the extracts already made can be so employed as to produce satisfactory results, or that they can be combined, in a manner that would do justice to the intrinsic merit of the observations, with extracts made on a more complete and satisfactory system.

(d.) *As regards the method of discussing and tabulating the results of the Observations when extracted.*

We recommend that the results of the Observations when extracted should be tabulated on one uniform plan, and we give in the Appendix* a form of the Table, which we think might be adopted for the purpose. It would occupy one page of a book, and letter-press descriptive of the square, explaining whatever the table might not be able to include, might occupy the page opposite, or be printed separately. The details are described in the form above referred to. It is not desirable that the Squares should be described and tabulated in the strict order of their numbers, or that their issue should be long delayed for the sake of making the issue complete, but rather that separate parts should be published at the discretion of the Office, capable of being bound together into well-indexed volumes, each referring to some particular Ocean.

(e.) *As regards Publication of Meteorological Results.*

We recommend that the Meteorological publications be, as a general rule, confined to the results obtained as above, and that no original observations, no fragmentary papers, and no speculations on Meteorology be henceforth issued.

(f.) *As regards Publication of other Results useful to Navigation.*

We recommend that any special matters of immediate importance to navigation which are discovered in extracting the Register be at once brought to the notice of the Hydrographer for publication, if he thinks fit. We also recommend that the Registers, when the Meteorological extracts have been made, shall, either under the direction of the Hydrographer or otherwise, be so kept and dealt with as that they may be utilized for the current and varying wants of navigation.

In respect of Charts we do not feel it necessary to give any special recommendation. The Admiralty Hydrographic Department are now devoting considerable pains to the preparation of physical charts, such as Ice, General Ocean Current, and Wind Charts. In these it is proposed to embody the results collected by the Meteorological Department in a form available to seamen.

PART II.

WEATHER TELEGRAPHY: FORETELLING WEATHER; AND OBSERVATION AND STATISTICS OF WEATHER WITHIN OR AFFECTING THE BRITISH ISLES.

13. *Origin of the Practice of Telegraphing and Foretelling Weather.*

We next proceed to consider the subject of Weather Telegraphy, of Foretelling, or, as Admiral FitzRoy termed it, "*Forecasting*,"† weather, and of observing the changes of weather within the British Isles, with the view of discovering the laws which govern those changes. This last part of the subject is intimately connected with the foretelling of weather, since it is upon a knowledge of such laws, and upon such a knowledge only, that any sound system of foretelling weather can be based.

As early as the year 1857‡ the late Admiral FitzRoy's attention had been directed to the daily observation of the changes of weather over the British Isles, with a view to the prediction of such changes. He states in his report of 1862§:—

"By continued and consecutive series of charts, several hundred in number, constructed on the simultaneous or synchronous principle, an insight into the laws of our atmosphere, into meteorological dynamics (distinct from statistical results, pre-

* Appendix No. 6.

† This word "*Forecast*" seems to have been used for the reason that it expressed a less degree of precision and certainty than the more usual words "*Predict*" or "*Foretell*." Whether the reason is a sound one may be doubted. The use of vague phraseology has a tendency to make those who use it satisfied with uncertain conclusions.

‡ Report of Meteorological Department, page iii, 1862; also Eleventh Number of Meteorological Papers, 1862, page 276.

§ Paragraph 8, p. iv.
14145.

" viously obtained at observatories and elsewhere), has been gained, *which has enabled us to know what weather will prevail during the next two or three days, and, as a corollary, when a storm may occur.*"* These seem satisfactory and rewarding results. " Their bases shall be popularly explained in the following chapters of this report."

In September 1859 the following resolution was adopted by the Council of the British Association at Aberdeen :—

" The Committee of the section of Mathematical and Physical Science having represented the probable importance of occasional telegraphic communication between a few widely-separated parts of Great Britain and Ireland, by which warning may be given of storms, the General Committee recommends application to the Board of Trade for such an arrangement as may further this object authoritatively."

This resolution was communicated to the Board of Trade in December of the same year, and Admiral FitzRoy was directed to prepare a plan, to be tried experimentally, to convey to and from a certain set of telegraph stations intelligence of approaching storms. Admiral FitzRoy was subsequently put into communication with the Committee of the British Association, consisting of General Sabine, Professor Walker, and Mr. Gassiot, and the following resolutions were in consequence, on the 25th February 1860, adopted by the Council of the Association :—

" 1. Great Britain and Ireland to be divided into three 'weather districts,' North, East, and South-west. The first including all Scotland; the second, thence by the coast to Dover Straits; and the third, all the south and west coasts of Ireland.

" 2. In each of these districts, officers now on duty there, to be selected, instructed and provided with instruments (now available).

" 3. These officers (only three or four in each district) will send such telegraphic messages to London *occasionally*, as their instruments specify.

" 4. These messages will be posted at Lloyd's, and transmitted to the other selected stations, where they will likewise be conspicuously posted.

" 5. If found useful, *results* of such limited communications may be followed by more extended systems."

It will be observed that upon the face of these resolutions there is nothing to show that the Council of the British Association intended anything more than that storms already known to exist at one place should be announced by telegraph to other places; and that at any rate there is nothing in them upon which to found such an elaborate system of foretelling probable weather as was subsequently adopted.

In the meantime M. Le Verrier, Senator and Director of the Imperial Observatory at Paris, had established a system of telegraphing the state of the weather daily, not only from various ports in France, but also from other ports in Europe, to Paris, and also from port to port in France, and he invited the British Government to join in the system.

In doing this, M. Le Verrier expressly confined himself to the communication of the actual state of the weather, and apparently deprecated any premature attempt to foretell anything except the approach of storms known by telegraph to exist elsewhere. Indeed he wished, in the first instance, even to avoid this, and to confine the system to regular daily communication of actual Weather by periodical Telegrams. In a letter to Professor Airy, the Astronomer Royal, dated 4th April 1860, which contained his first proposal, after stating at length the measures he had adopted and was proposing for the purpose of such communication, he says: " Signaler un ouragan des qu'il apparaîtra en un point de l'Europe, le suivre dans sa marche au moyen du télégraphe et informer en temps utile les côtes qu'il pourra visiter, tel devra être en effet *le dernier résultat*† de l'organisation que nous poursuivons. Pour atteindre ce but, il sera nécessaire d'employer toutes les ressources du réseau Européen et de faire converger les informations vers un centre principal, d'où l'on puisse avertir les points menacés par la progression de la tempête." And he adds: " Cette portion de l'entreprise est aussi de beaucoup la plus délicate. Il faut éviter d'en compromettre le succès en voulant la produire avant le temps où son utilité, universellement sentie, en fera partout réclamer l'organisation." In a subsequent letter to Admiral FitzRoy, dated 18th April 1860, written in reply to one in which Admiral FitzRoy had apparently suggested an endeavour to predict storms by a special service, he says: " Le service régulier que nous avons établi n'est pas tout ce qu'on pourra faire. J'indique, à la fin de ma lettre (*i.e.*, in the passage quoted above from the letter to Professor Airy) qu'il faudra ultérieurement en établir un service extraordinaire pour prévenir de la marche des tempêtes, au moment même où elles apparaîtront." And after pointing out that such an extra-

* The Italics in this passage are our own.

† The Italics are our own.

ordinary service, if commenced prematurely, might lead to great errors, which would compromise everything, he says: " Si donc vous me la permettre, M. l'Amiral, " j'oserais vous recommander de ne pas repousser ce que nous proposons en s'appuyant " sur ce qu'on pourrait faire davantage."

Admiral FitzRoy, however, relying on his belief that information had been collected and sufficiently digested in his office during five years with the special object of Foretelling Weather, and thinking that this country should take an independent course, and thinking also that too much time and labour had been given by meteorologists to registering and publishing facts, and that too little attention had been directed to practical results, persevered in his intention of foretelling, or, to use his own expression, *forecasting*, not only storms announced by telegraph as already existing, but Weather generally.

14. *Establishment of System of Telegraphing Weather.*

Arrangements were accordingly made during the summer of 1860 for the regular daily communication by telegraph to London of the state of the weather at 15 stations in the United Kingdom, for receiving daily telegrams of Weather from various places in Europe through Paris; and for the daily communication by telegraph to Paris of the state of the weather at certain points in the United Kingdom.

The facts thus communicated to the Meteorological Department were thenceforth published in the daily papers.

15. *Establishment of Storm Warnings and daily Forecasts of Weather.*

At the same time Admiral FitzRoy made arrangements for hoisting Storm Signals and Weather Warnings at certain ports, and they were hoisted for the first time in February 1861.* In June of the same year an attempt was made in another department of the Board of Trade to institute a careful check upon the accuracy of the storm warnings by obtaining exact returns from various public officers at the places where they were hoisted. To this subject further reference is made below.† In August 1861 a great extension of the Weather Predictions took place, first in extending the Storm Signals to many places not previously warned, viz., to 130, as it would seem, instead of to 50 places as at first; and in making Daily Forecasts of the Weather in the newspapers.

The system of Telegraphy, of Storm Warnings, and of Daily Forecasts has since been continued, and is now carried on with great zeal and intelligence by Mr. Babington, who, during the latter months of Admiral FitzRoy's life, had the principal management of it. The public have taken great interest in it, and there can be no doubt that the Storm Warnings are very popular at the ports. Foreign Governments have shown much interest in the system. The predictions of the English office have been sent daily to Paris. M. Le Verrier has organized a system of Storm Warnings similar to our own, and also publishes daily a very full Bulletin of the actual weather, illustrated with maps of Barometric Pressure and of Wind. The Bulletin and map are published by a private person, but under the control of the Imperial Observatory, and may be subscribed for like any other newspaper. For some time his Bulletin contained predictions of the probable weather for different parts of France, but we observe that these daily predictions have been recently discontinued. Professor Dove, at Berlin, has recently organized a system of occasional Storm Warnings, similar, we believe, to our own. Italy has lately been establishing a system of Storm Warnings on an independent plan.‡ Holland has also established a system of occasional Storm Warnings, and Russia is doing the same. Occasional Storm Warnings are sent from the English Meteorological Office to Denmark, Sweden, Hanover, Hamburgh, and Oldenburgh, at the request of the authorities in those countries.

Under these circumstances we have felt it our duty to inquire very carefully upon what basis the practice of making predictions, both Daily and Occasional, rests; and what evidence there is, first, of its accuracy, and, secondly, of its practical utility.

16. *Practice of the Department in foretelling Weather.*

The following is, so far as we can learn, the practice pursued by the Department in foretelling probable Weather §:—

In making Daily Forecasts the area of the British Isles is divided into districts; and the average state of the weather in each district is deduced from the weather reports received from the stations contained within it.

* Report, 1862, page xi.

† See page 28.

‡ See correspondence between M. Matteucci and Admiral FitzRoy in Report of Meteorological Department for 1864, pp. 33 to 36.

§ See Admiral FitzRoy's Weather Book, p. 127.

A Daily Forecast for each district is then made provisionally.

The separate Forecasts are next collated and revised, regard being paid to the following particulars :—

- (a.) The mutual actions of the estimated weather in each of the districts of the British Isles.
- (b.) Scattered information in respect to such distant areas of high and low barometer, as the continental stations can afford.
- (c.) Geographical conditions of mountain, plain, or sea, by which the free movements of the air may be affected.

It is the custom of the Department to perform the whole of the foregoing operations, and to determine the forecast, after a simple inspection of the list of weather returns. No notes or calculations upon paper are made. The operation occupies about half an hour, and is conducted mentally.

This operation is performed every morning, and the result is sent to the papers.

If from the returns thus received, or from subsequent Telegrams, the Department, still reasoning in the same way, concludes that a gale is to be expected, notice is sent by telegraph to the ports to hoist the Storm Signals.

17. This practice not carried on according to any definite rules.

We have already mentioned that Admiral FitzRoy collected for several years a number of observations and prepared a number of charts, with a view to this special object. We have made inquiries on the subject of these observations and charts. But we do not find that they were ever carried on or completed so as to bring out clear and definite conclusions, or that their results were ever reduced into the shape of definite rules or principles. At any rate no such conclusions and no such rules now exist in the Department. Mr. Babington tells us that he does not think that the grounds on which the Department acts in foretelling weather are capable of being stated in the form of Rules or Laws, and he is unable to give us any precise information as to those grounds otherwise than by referring to Admiral FitzRoy's publications, and giving us particular examples. Admiral FitzRoy himself has, in his Report of 1862, and in his Weather Book, indicated certain general conditions implied by the state of the atmosphere as observed simultaneously at scattered stations, and certain probabilities of future weather arising therefrom, and similar conditions and probabilities may be inferred from Mr. Babington's examples. That many of these conditions and probabilities are capable of being stated in the form of Laws, and that some of them are Laws that would be accepted by Meteorologists generally we do not doubt; nor do we doubt that the probabilities are in many cases considerable, and especially in the important cases of sudden and violent changes of weather. But we do not find that these conditions and probabilities have been reduced into any definite or intelligible form of expression, or are, as they now exist in the Office, capable of being communicated in the shape of instructions. Were the gentlemen now in the Department to leave it, no rules would be found in the Office for continuing the duties on their present basis. We have endeavoured to give a notion of such of the maxims or probabilities on which the Department acts as we are able to extract from the sources above referred to.* But we are conscious that in attempting this we may be doing injustice to the practice.

18. The Maxims on which the Department acts not founded on any sufficient induction from facts.

Under these circumstances it is scarcely necessary to say that the maxims on which the Department acts in foretelling weather, whatever they may be, and whatever may be their intrinsic value, are not shown to have been obtained and established in the Department itself by means of accurate induction from observed facts. Neither is there any evidence that in framing such maxims, the various attempts of other Meteorologists to give precision to the science have been utilized. No exact value seems to have been assigned to such maxims. Still less has it been attempted to estimate, by any accurate method of calculation, the value of the compound probabilities that necessarily arise from the application of each separate combination of these maxims to the ever varying and complicated phenomena of the weather.

19. Experience of the Office not utilized in reducing this practice to a system.

Nor do we find that the experience of the Department in issuing these predictions, which is now of five years' standing, has been turned to account in reducing the practice

* See Appendix No. 7.

to a system. If on the occasion of each prediction steps had been taken to elicit distinctly and to record the reasons or maxims on which it was based, and if, upon comparing the actual result with the prediction, steps had been taken to ascertain in what respects the assumed maxim or maxims had been properly applied to the observed facts and had been found consistent with the subsequent results, and in what respects it had been misapplied to or inconsistent with them, the Department would probably by this time either have been in possession of certain determined and trustworthy rules, or would have been in a position to say that no such rules can be framed. But this has not been done. The particulars of weather, pressure, wind, &c., as telegraphed each day, and as published in the newspapers, with the forecasts, are kept in a book; and in this book are also entered such accounts of the weather, of the effects of gales, &c., as it is found possible to extract from the newspapers.* But, in the first place, the data thus obtained are not sufficient for an accurate test. The daily telegrams are only from a few places, and only for a given moment in the 24 hours; whilst the extracts from newspapers are vague and miscellaneous. And in the second place, no attempt has been made to utilize the facts obtained from these several sources, or to draw any conclusions from the comparison of the facts with the predictions. They have been published at length for 1862, but they have not been analyzed. The experience of the gentlemen employed in the work may no doubt have given them some additional insight; but so far as concerns any exact conclusions, capable of being stated in definite terms, the five years' experience of the system of foretelling weather have produced no results.

20. *Distinction between Daily Forecasts and occasional Storm Warnings.*

In thus criticising the basis on which the system of foretelling weather at present rests, we have not distinguished between the occasional Storm Warnings and the Daily Forecasts, because it was urged by Admiral FitzRoy,† and is still stated in the Department that both rest on the same footing, and must stand or fall together as part of one system. But we are not satisfied that this view is correct, and we think that it probably does injustice to the Storm Warnings. That the laws which govern the weather are uniform in their operation, and that the lesser as well as the greater changes in the atmosphere are subject to fixed conditions, we are ready to assume; and we do not doubt that in order to give occasional warnings of violent storms, it is necessary to obtain as constant and as frequent observations as for Daily Forecasts. But imperfect as our knowledge of these laws and conditions still is, it is only natural to suppose that the more sudden and violent changes of wind and weather which are the subject of the occasional Storm Warnings, are preceded by more decided indications than is the case with the more common and less violent changes of our variable climate; and that the observations made in the former case (*e.g.*, of a sudden fall of the barometer), may afford a comparatively trustworthy intimation of the approaching phenomena, whilst the smaller daily changes of barometer, thermometer, &c., during ordinary weather, may to our imperfect appreciation have no meaning which we are able accurately to interpret. We believe that this view of the case is borne out by the facts as mentioned below.

21. *Comparison of Daily Forecasts with the facts as observed by the Department.*

We proceed to consider what evidence there is of the accuracy of the predictions already made, and in doing this we think it desirable to distinguish between the Daily Forecasts and the Occasional Storm Warnings, and to treat the former first.

We find that from the commencement of the practice of Foretelling Weather, a book has been kept in the Department, in which the daily reports of weather from the stations, as published, are entered, with the appended Forecast for the subsequent day or days, so that by comparing the report made on the one day with the Forecast for that day made on the previous day or days, some kind of comparison of Forecast with fact may be made. In addition, extracts have been made with much diligence from the newspapers and other sources of statements concerning the daily weather at the Ports, as well as concerning any remarkable storms or other phenomena, as indicated by wrecks, vessels putting into port in distress, &c. And from the materials thus given an attempt was at one time made to compare the Daily Forecasts with the facts. The whole of the book for the period from the 31st July 1861 to the 27th February 1862 has been printed and published‡ by the Department. But these books are far from giving us the means of forming a conclusive opinion. In the first place, the Forecasts themselves are, as might be expected, expressed in such general terms that there is difficulty in com-

* See Eleventh number of papers published by the Department, pp. 22 to 266, where the Reports and Forecasts from 31 July 1861 to 27 February 1862 are published at length.

† Report 1863, p. v.

‡ 11th No. of Meteorological Papers.

paring them with facts. In the second place, at the outset of the practice, the times for which the Forecasts were made were changed several times. Sometimes they were for the next succeeding day, sometimes until next report, sometimes for the next two days together, sometimes for each of the next two days separately. And the districts to which they were applicable have also been altered. It is, therefore, difficult to compare the Forecasts of one period with those of another. In the third place, the facts given by the Daily Weather reports (which have also been altered from time to time), are not sufficient to give any accurate information of the actual weather. With the exception of the items "Extreme force of wind since last report," and "Direction of extreme force," (particulars which were not inserted in the reports originally), the daily observations are made only once in the 24 hours, viz. at 8 a.m. They are made at a few places only; and are so arranged in the published report as to make it difficult to attach a general meaning to the report, without re-arranging it in each case. Nor do the extracts from the newspapers and miscellaneous sources give much additional help. Miscellaneous facts, gathered by the Department itself from miscellaneous sources, without knowledge of the observers, and without order or method in the observations, can be of little value. We think, therefore, that a comparison of facts with Daily Forecasts, made under these circumstances, and from these data, is wanting in all the elements necessary to inspire confidence. And we are confirmed in this view by the examination of a page taken at random from the book in question.*

22. *Comparison of Daily Forecasts with facts, as observed elsewhere.*

But there exist other methods of testing the accuracy of the Daily Forecasts of weather. In 1864 steps were taken in the Wreck department of the Board of Trade for instituting a comparison of the actual weather with the Daily Forecasts and the Storm warnings. As regards the Daily Forecasts, the only materials available were those contained in the daily published Weather Reports, and for the reasons above mentioned those data were found very insufficient for the purpose. Such as they were, however, they were compared with the Forecasts. Each place named in the weather reports was taken separately, and for each day in the four months, March, April, September, and October, at each place. Two separate diagrams were prepared, showing, the one, the two forecasts of direction of wind for the district in which the place was situate, made on the two preceding days, and, so far as practicable, the actual direction of the wind; the other showing the two Forecasts of strength of wind for the same district, with the actual extreme strength of the wind. For instance, suppose the day to be a Thursday, for which forecasts had been made on the preceding Tuesday and Wednesday. The first diagram represented the Forecast of direction of wind for the Thursday made on the Tuesday, the Forecast of direction of wind for the Thursday made on the Wednesday, and the actual direction on the Thursday. The second diagram showed the Forecast of Force of wind for the Thursday made on the Tuesday, the Forecast of Force of wind for the Thursday made on the Wednesday and the actual force of the wind on the Thursday. It was not thought worth while to print the whole of these diagrams in the Parliamentary Return † moved for in 1864. But Scarborough was selected as a typical place, and the diagrams in question for that place are printed in the Return. The comparisons of the Forecasts with the facts, so far as direction of wind is concerned, are of no great value, because the weather reports only give the direction of wind at 8 a.m.; but as regards force, they are more important, since the weather reports give the extreme force of wind during the 24 hours, and not only at 8 a.m. A glance at the diagrams in this Parliamentary Paper will show the little correspondence there is between the black line which marks the actual extreme force, and the shaded lines which mark the Forecasts.

23. *Comparison of Daily Forecasts with each other and with Storm Warnings.*

These diagrams afford a more important test. Though it is under the circumstances impossible to make an exact comparison of Forecasts with facts, it is possible to make an exact comparison of the Forecasts with each other; i.e., to compare the Forecast for Thursday made on the Tuesday with the Forecast for Thursday made on the Wednesday; and it is possible to do this exactly as regards both direction and force. A glance at the diagrams in the Parliamentary Return above referred to will show that there is not only no correspondence, but no determinate relation of any kind between them. The Forecasts made on two succeeding days for the third day differ from one another in every possible way.

* This page, 164, with a criticism upon it, is given in the Appendix No. 8.

† See Parliamentary Paper No. 200, Session 1864.

But this is not all. In the same Parliamentary paper are contained diagrams showing in a much more accurate manner the comparison of the Occasional Storm Warnings for 1863 with the facts. In these diagrams are entered on shaded lines the Daily Forecasts for the days on which the Storm Warnings were subsequently sent out. There were on the whole 47 days, in 1863, on which Storm Warnings were issued; and out of these there were only 10 days in respect of which the Daily Forecasts gave for any district whatever in the United Kingdom any notice of a storm or violent gale. For instance, looking to page 67 of the above-mentioned Return, we find that the Forecast made on the 15th December 1863, predicted calm or moderate weather in the southern district on the 16th December, whilst on the morning of the 16th December a Storm Warning was issued to the Southern coast, and was followed in some places by a heavy gale. If the districts or places, as well as the days, were taken separately, the difference between the Forecasts and Storm Warnings would be still more striking. We have reason, as we shall point out hereafter, to think that the Storm Warnings have been more accurate than the Daily Forecasts; and the fact above noticed shows at any rate that if they have proved to be correct, the Daily Forecasts must have been very much the reverse.

It has not been thought worth while to attempt any similar comparison of the Daily Forecasts with each other, or with the Storm Warnings for the whole of the period subsequent to 1863, more especially as it does not appear that the Department has since that time made any change in the method or principles upon which it has acted. But the Daily Forecasts for the month of December 1865 have been compared with each other, and with the Storm Warnings issued in that month. From this comparison it appears that, taking the Daily Forecasts for each district of the United Kingdom, North, West, South, and East, separately, as published in the newspapers, there were in that month 84 sets of reiterated Forecasts, or in other words there were 21 days, for which in respect of each of the four districts two Forecasts were issued, one on the previous day, and the other on the day before that. But of the 84 sets of double Forecasts there are only 11 in which the two Forecasts agree with each other verbatim. There are 27 which agree substantially with each other, and 46 which do not. The per-centages, omitting fractions, are as follow:—

Verbatim agreement	13 per cent.
Substantial do.	32 „
Total disagreement	55 „

Further it appears that four distinct Storm Warnings were issued in the month of December to each of the four districts. Taking the warnings for each of the four districts of the United Kingdom separately, the number is 16. For the districts in respect of which these Storm Warnings were issued, there were in all 32 Daily Forecasts, and of these Forecasts there were 10 only in which a gale was predicted. There were, therefore, only 10 Daily Forecasts, out of 32, which agreed with the Storm Warning, and 22 in which no gale was predicted, and which consequently were at variance with the Storm Warnings. The per-centages are:—

Agreement	31.
Disagreement	69.

It seems therefore clear that, as a rule, the Daily Forecasts agree neither with each other nor with the Storm Warnings, though all are issued by the same Department, according to the same system, and within a short time of one another.

We have had the Daily Forecasts, the Storm Warnings, and Daily Reports of the actual and extreme Force of Wind for the year 1865 at seven selected ports thrown into the form of a calendar, so as to show opposite each day in the year the Storm Warning, if any, the Forecasts made on the two previous days, and the actual extreme strength of wind; and we find that the Tables thus obtained entirely bear out the above conclusion. Two of these tables, viz., those for Shields and Plymouth, are printed in the Appendix.*

Under these circumstances we cannot say that there is evidence that the Daily Forecasts have been correct in point of fact, or that “we are enabled,” to use the words quoted above,† “to know what weather will prevail during the next two or three days, and, as a corollary, when a storm will occur.” On the contrary the evidence points strongly the other way.

24. Utility or Inutility of Daily Forecasts.

As regards the utility of the daily Forecasts, we have to observe, in the first place, that if there is no sound basis on which they are founded, and no evidence that they

* See Appendix No. 9.

† See p. 18.

have been correct in point of fact, they are wanting in everything which can render them practically useful. But even independently of this, we doubt whether intimations of ordinary coming weather, so vague as these Forecasts must necessarily be, can be of any real value. If it were possible to tell the sailor in a particular port that the wind, for say 24 or 48 hours, would be westerly; or to tell the farmer in a given district that he would have rain within that time; or to tell the gardener that his crops would need protection from frost or hail; or to tell the traveller that the weather would be propitious for his journey,—these predictions, if correct, would be useful. But nothing of the kind is attempted. The Forecasts indicate, as the Department has repeatedly stated, merely the opinion of the Department concerning a probability. They extend to large districts, without attempting to describe the varied particulars of weather in different parts of those districts. And they thus fail to give that information which alone could make such predictions of practical value.

25. *Conclusion against continuing Daily Forecasts of Weather.*

Considering, therefore, that there is as yet no scientific basis for these daily Forecasts, that they are not shown to be generally correct in point of fact, and that there is no evidence of their utility, we see no good reason why a Government Department should continue to undertake the responsibility of issuing them.

In this conclusion we believe we are borne out by the best practical meteorologists. M. Le Verrier, who for some time attempted a practice of the same kind, has, as we have said before, given it up. Maury, as is obvious from Admiral FitzRoy's remarks,* is opposed to it. M. Dove, of Berlin, is confining himself to a system of Storm Warnings, and appears to find some difficulty even in this.† M. Matteucci, of Turin, was obviously in difficulty, even as regards the Storm Warnings.‡ And we may add that we can find no evidence that any competent meteorologist believes the science to be at present in such a state as to enable an observer to indicate day by day the weather to be experienced for the next 48 hours throughout a wide region of the earth's surface.

It may be said that the Daily Forecasts cause no additional expense, and that they are popular and interesting, and should therefore be continued.§ But we do not think this argument satisfactory. The practice of issuing daily official notices of the weather, the truth of which is warranted neither by science nor by experience, is inconsistent with the position and functions of a Government department, and must be prejudicial to the advancement of true science. It must lead the public to confuse real knowledge with ill founded pretences, and, in the end, to despise the former because the latter prove to be unfounded. It must divert the attention of those who are engaged on the predictions from what is really practicable and useful, and, by compelling them to issue formal opinions every morning, whether they have any substantial grounds for those opinions or not, has a tendency to produce fatal results of carelessness and inaccuracy.

26. *But not against publishing Telegraphic Reports and Remarks.*

For these reasons we deprecate the continuance of those Daily Forecasts which attempt to predict with more or less accuracy the direction and force of wind, and other particulars, for each of the two succeeding days and for each of the four districts into which the country is divided. But in doing this we do not wish to put an end to the system of telegraphic communication of weather, or to the publication of those telegrams in the newspapers, or to the publication of the general remarks on the results and bearing of the information, which, following the example of M. Le Verrier, Mr. Babington has been recently in the habit of publishing with the telegrams. Such remarks, if made with knowledge and judgment, have the following advantages: they may be made or not, as the circumstances require; they need not extend to any particulars except those which the reported facts press upon the attention of the observer; and they translate the figures and facts given by the telegraphic reports into a form intelligible by, and probably interesting to, the public.

We insert in the Appendix a specimen of one of the published Reports, with the "Daily Predictions," and also with the "remarks" to which we have adverted. We also insert a specimen of M. Le Verrier's daily weather Bulletins.¶ As regards these Reports some further recommendations will be found below.¶

* Report of 1864, Appendix, p. 18.

† Report of 1864, Appendix, pp. 33–36.

¶ See Appendix, Nos. 10 and 11.

† Report of 1864, Appendix, pp. 30, 31.

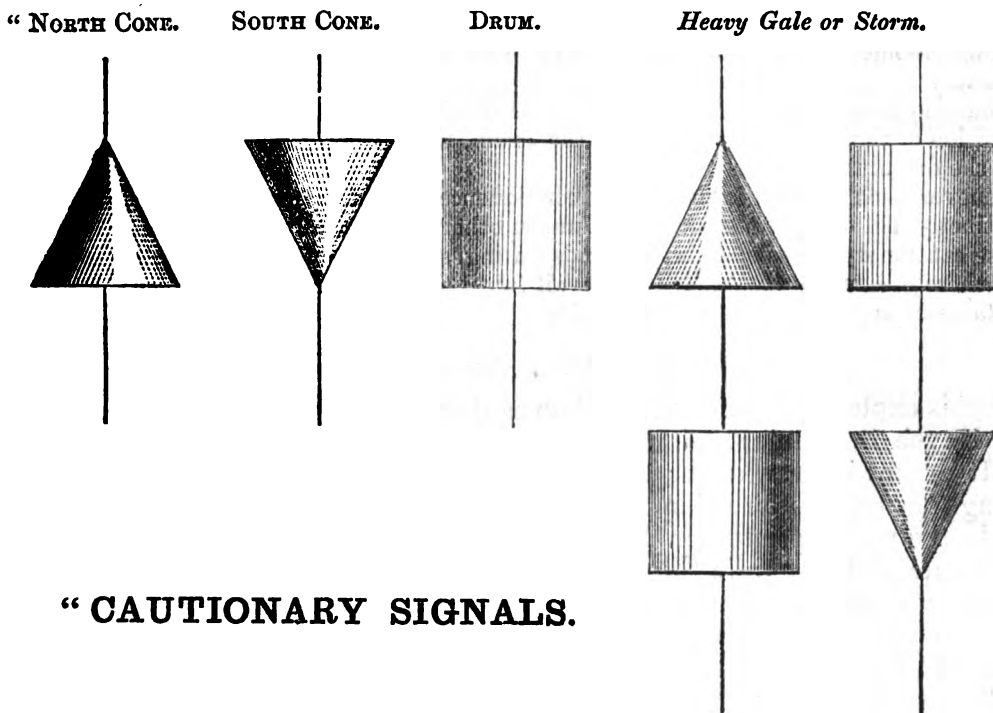
§ See Admiral FitzRoy's Report of 1863, p. vii.

¶ See pp. 37, 38.

27. *Storm Warnings.—The official Description and Explanation of them.*

We pass now to the subject of the Occasional Storm Warnings and to such tests of their accuracy as we have been able to procure. The following is the description and explanation of these signals, verbatim, as published and circulated amongst mariners by Admiral FitzRoy.

“ BAROMETER CARD AND STORM WARNING SIGNALS.

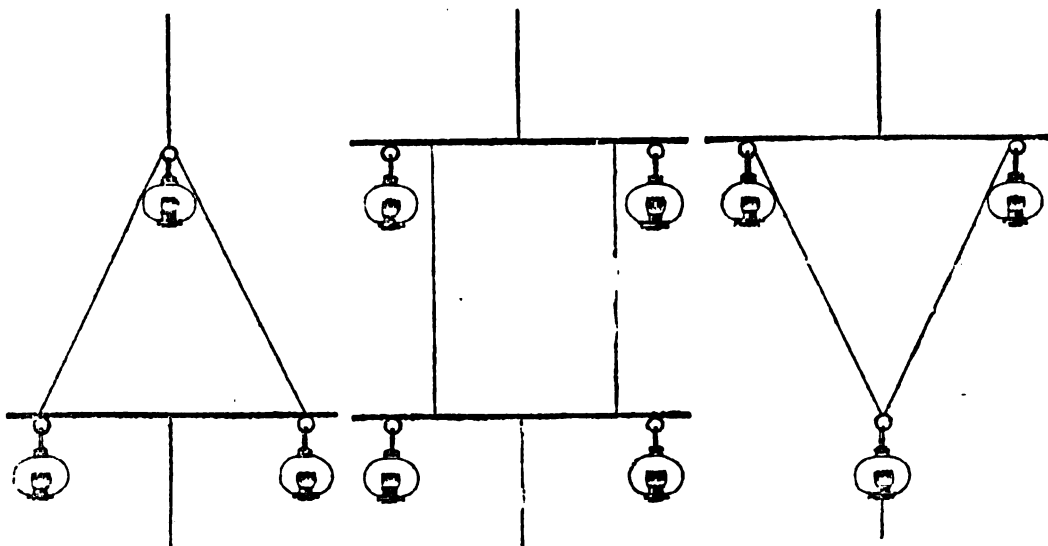


“ CAUTIONARY SIGNALS.

“ <i>Gale,</i> “ <i>probably</i> “ <i>from the</i> “ <i>Northward.</i>	<i>Gale,</i> <i>probably</i> <i>from the</i> <i>Southward.</i>	<i>Gales</i> <i>successively.</i>	<i>Dangerous</i> <i>Winds</i> <i>probably at first</i> <i>from the</i> <i>Northward.</i>	<i>Dangerous</i> <i>Winds</i> <i>probably at first</i> <i>from the</i> <i>Southward.</i>
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“ NIGHT SIGNALS.

“ (instead of the above)
“ Lights in triangle, or square.



“ Four lanterns and two yards, each four feet long, will be sufficient—as only one signal will be
“ used at night.
“ These signals may be made with any lanterns, showing either white, or any colour, but *alike*.
“ *Red is most eligible.* Lamps are preferable to candles. The halyards should be good rope, and
“ protected from chafing. The lanterns should hang *at least three feet apart.*”

OFFICIAL EXPLANATION OF STORM WARNING SIGNALS.

- "A staff and two canvas shapes being provided, the following use will be made of them occasionally; perhaps once or twice in a month, on a yearly average.
- "One shape, that of a drum (or cylinder) has the appearance of a black square of (not less than) three feet (seen from any point of view) when suspended.
- "The other shape, a cone (not less than) three feet high, appears triangular (from any point of view) when suspended.
- "A cone, with the point upwards, shows that a gale is *probable*; at first from the *northward*.
- "NORTH CONE.
- "A cone, with the point downwards, shows that a gale is *probable*; at first from the *southward*.
- "SOUTH CONE.
- "A drum, alone, shows that stormy winds may be expected *from nearly opposite quarters** successively.
- "A cone and drum give warning of dangerous winds, the probable *first* direction being shown by the position of the cone, point up, above the drum, for northerly (or polar) wind, point down, and below the drum, for southerly.
- "Whenever such a signal is shown (in consequence of a telegram from London) it will be kept up distinctly, till dusk of *that day only*, unless otherwise specially directed.
- "These cautionary signals advert to winds during some part of the next nights and two or three days; therefore due *vigilance* should prevail (until the weather is again settled), without deferring *departures* or any operations *unnecessarily*."

28. *Inherent Ambiguity of this Description.*

Upon this explanation we have to observe that the signals and the meanings attached to them by the Department are not free from ambiguity.

(1.) It is not clear whether the drum and cone differ from the cone singly or the drum singly as regards direction only, or as regards intensity as well as direction.

(2.) In the words printed on the diagram the cone with point upwards is stated to mean "a gale probably from the northward;" but in the further explanation it is stated to indicate "a gale *at first* from the northward." It is therefore difficult to know precisely not only what is intended by the cone with the point upwards, but in what way the cone with the point upwards differs from the cone with the point upwards and the drum.

(3.) The same thing is true, *mutatis mutandis*, of the cone with the point downwards.

(4.) In the above description and explanation the cone with the point upwards is made to signify the North, and the cone with the point downwards the South. But in the Report of the Meteorological Department for 1862,† it is stated that the cone with point up indicates a gale from the "north polar direction," or "polar quarter," that is, as Admiral FitzRoy further states, "from W.N.W., true, by North to E.S.E.," and that the cone with point down indicates a gale from the "tropical or equatorial quarter," *i.e.*, from "E.S.E., true, by South to W.N.W."

(5.) The signal is to cover "some part of the next nights and two or three days." The scope given by this, and the consequent ambiguity, need no observation.

It is obvious that these ambiguities in the signals themselves and in the explanations given by Admiral FitzRoy make it difficult to compare the Storm Warnings with the subsequent facts. There is comparatively little difficulty in ascertaining whether a Storm Warning has been followed by a gale; but in many cases there is almost insuperable difficulty in ascertaining whether the different characteristics indicated by either of the two cones or by the drum, or by the combination of these signals have actually taken place. Suppose, for instance, that the signal has been a south cone, and that the wind has changed from S. by W. to N.W., is the signal to be considered as having been correct, or would a south cone under a drum have been the appropriate signal? Or, suppose a gale to range from E. to S., what would be the appropriate signal? Again, suppose a south cone to have been hoisted on Monday for a given district, is the warning to be deemed to have been fulfilled if a southerly gale has taken place on the Wednesday night or Thursday following? Or, suppose the south cone on Monday to have been followed (as is frequently the case) by a drum or north cone on Tuesday, what must the weather be to correspond with the warning?

How seriously these ambiguities must affect the practical value of the warnings, and how desirable it is to remove them, if possible, is obvious. On this part of the subject certain specific recommendations will be found below. We now mention them for the purpose of showing how difficult it must be to apply precise tests to warnings which are themselves wanting in precision.

* In the Barometer Manual for 1863 the words in italics are altered into the following, viz.: "*from more than one quarter*."

† Page 63.

And this difficulty is greatly aggravated by the facts noticed above, *viz.*, that there have not been kept in the Meteorological Department itself any precise records of storms or of the weather following upon the Storm Warnings. The only records kept in this Department are those mentioned above,* and it is needless to repeat how vague, incomplete, and unsatisfactory they must necessarily be. In one respect, however, they are more satisfactory in the case of violent gales than in the case of more ordinary weather. The former attract much more attention and are much more fully and more accurately reported in the newspapers than the latter, and the materials, therefore, of which the Department has made use are so far more copious and trustworthy. Still they are far from having that completeness and exactness which science requires.

29. *Comparison of Storm Warnings with facts as recorded by Meteorological Department.*

From these materials Mr. Babington, who is the senior clerk in the Meteorological Department, and who has had the charge of the Department since Admiral FitzRoy's last illness, has with much industry made a Digest, extending in the whole from the 1st March 1862 to the 31st March 1865, of all the Storm Warnings issued by the Office during that time, with the character of the wind and weather following.†

We have carefully examined these several papers. Having regard to the want of precision in the forecasts themselves, and to the want of completeness, as well as of precision, in the Observations to which we have adverted above, we need scarcely say, that we can regard any results to be derived from them as approximate only. It is probable that in estimating these results in figures and summing them up, no two persons, and even no one person making the calculation twice over, would adopt the same figures, or arrive at precisely the same results. But we have, nevertheless, attempted to obtain a result in the following manner, and we believe that it is not without its value.

The warnings are generally issued for different districts. We have, therefore, treated each warning sent to each district as a separate warning, and have endeavoured from the facts given in the Digests prepared in the Meteorological Department, to ascertain whether this warning was followed by a gale, and whether the actual direction of the gale agreed with the direction indicated by the warnings. The approximate figures which we have thus obtained are as follows:

Number of Warnings.		Force alone.		Direction, as well as Force.	
		Right.	Wrong.	Right.	Wrong.
April 1, 1862 to March 31, 1863	say 160 -	130 or 81 per cent.	30 or 19 per cent.	55 or 34 per cent.	105 or 66 per cent.
April 1, 1863 to March 31, 1864	say 125 -	85 or 68 per cent.	40 or 32 per cent.	60 or 48 per cent.	65 or 52 per cent.
April 1, 1864 to March 31, 1865	say 120 -	90 or 75 per cent.	30 or 25 per cent.	40 or 33 per cent.	80 or 67 per cent.
Total	- 405 -	305 or 75 per cent.	100 or 25 per cent.	155 or 38 per cent.	250 or 62 per cent.

In estimating Force in this table those Warnings have been treated as "right," in which a gale was blowing when the signal was hoisted, as well as those, from whatever direction, in which a gale followed the Warning.

In estimating Direction those Warnings have been treated as "wrong," in which no gale has followed the Warning, as well as those in which there has been a gale, but not from the direction indicated by the signal. It is obvious that this is the proper way of treating them. The warning of the Direction of a coming gale cannot be right if there is no gale.

It will be observed that according to these returns about six out of every eight of the Warnings were right as regards Force. If from these were deducted the cases in which

* See page 21.

† This Digest, for the period from 1st March 1862 to 31st March 1863, is published in the Meteorological Report for 1863, Appendix 2 to 9. For the period from 1st January 1863 to 31st March 1864, it is published in the Meteorological Report 1864, pp. viii. to xxi. And for the period from the 1st April 1864 to the 31st March 1865, it is contained in papers which were submitted to the Royal Society, and which are referred to in their letter to the Board of Trade of the 15th June 1865.

a gale was blowing when the signal was hoisted, the proportion of those to be deemed successful, would be less.

In respect of Direction only three out of every eight were right, and in this respect the result would probably be more unfavourable if the ambiguities noticed above had not rendered it necessary to give a great latitude to the meaning of the Storm Warnings.

The results of these returns do not show that there has been any marked improvement in the three years.

It may be added that it also appears from these Returns that there were the following gales, for which no Storm Warnings were issued, viz. :

April 1, 1862	12th June.	Warning sent to part of coast ; gale extended to other parts.
to	18th December.	Ditto Ditto.
March 31, 1863	17th January.	Ditto Ditto.
April 1, 1863	12th May.	Warning to part of coast ; gale extended to the whole.
to	21st July.	Ditto Ditto.
March 31, 1864	30th September.	Ditto Ditto.
	1st October.	Ditto Ditto.
April 1, 1864	21st July and 23d August.	Gales between these dates for which no warnings were sent.
to	The gale on 31st July was sudden and severe.	
March 31, 1865	16th September and 17th October.	Ditto, ditto. One commencing 2d October lasted several days.

30. *Comparison of Storm Warnings with facts as recorded by Wreck Department of Board of Trade.*

We have, however, in respect of some of the Storm Warnings, a better test. From the 1st of July 1861 a more exact and complete Return of the weather following each Storm Warning has been provided by another department of the Board of Trade, viz., the Wreck Department, in the following manner. Upon a Storm Signal being issued, notice is sent by the Meteorological Department to the Wreck Department of the nature of the signal, the time of issuing it, and the places to which it is issued. At each of these places there is an Officer, either of the Coastguard or of the Customs, who is in constant communication with the Board of Trade. He is provided with a Form of Return, of which a specimen is given in the Appendix,* in which he enters the force and direction of the wind at the time of hoisting the signal, and at each interval of four hours† until the expiration of 72 hours from that time. This Return is then sent to the Wreck Department of the Board of Trade. There is, therefore, in that Department a complete history of every gale which has followed a Storm Warning since July 1861, at those places at which a Warning Signal has been hoisted. These Returns were submitted to Admiral FitzRoy, but no use has been made of them by his Department. He objected to them on the following grounds:‡—

1. "That the observations were made by landsmen or others, many of them incapable of recording the weather correctly, or unlikely to do so."

We do not think the objection valid. The greater number of the observers are in the service of the Coastguard, seafaring men, constantly on the watch, and accustomed to observe and estimate the force of the wind. The remainder are officers of Customs, very intelligent men, with a numerous out-door staff, also constantly on the watch and accustomed to shipping and to observe weather. Observations of this kind have not of course the value of observations made by self-recording instruments; but they are the best that can be had, and are at least as trustworthy as the observations made by telegraph clerks, or extracted from the newspapers, on which the Meteorological Department have solely relied.

2. Admiral FitzRoy's second objection was:—"That observations made at six-hourly periods could not have given a correct report of wind and weather during even one day. The common chances were 18 hours to 6, or 3 to 1 against any given blast of wind not lasting more than 5 hours being noted at all."

We are unable either to assent to this objection, or to understand the principle upon which he has calculated the chances. In the first place, there are very few gales which do not last more than 5 or 6 hours. In the second place, the chances against any blast of wind of less than 6 hours' duration escaping notice are not what the objection states them to be.

However, to meet this criticism, the intervals of observation were, in 1863, reduced to 4 hours, and the observers were called on, by special instructions in each case, to note the greatest violence of the gale if happening during a 4 hours' interval.

* See Appendix No. 12.

† At first the entries were made at 6 hours' intervals, but in consequence of Admiral FitzRoy's criticisms they have since 1st January 1863 been made at 4 hours' intervals.

‡ See his Report as originally printed, but not published, for 1862, page lxiv.

3. Admiral FitzRoy urged that it was not fair, when a Storm Signal had been hoisted throughout a district, to take the weather at each place separately as a test of its correctness or utility. A signal might, he would say, be hoisted at Liverpool and a gale might blow at Holyhead.

There is something in this objection, but not much. It is seldom that a gale is so entirely local in its character as to reach one place in a district and leave neighbouring places untouched. If a whole district is warned, the gale must, unless the warning is wholly untrustworthy, reach most of the places in the district. And if a Storm Warning hoisted at a given place is to mean, not that the wind is to blow at that place, but that it is to blow at some unknown place to which a ship may go from that place, it becomes too vague to be tested or relied on.

4. Admiral FitzRoy, with respect to Reports on the Direction of the Wind, observed that the reporters did not seem aware that only two directions were indicated by the Storm Warnings, viz., wind from the polar quarter, including the whole semicircle from W.N.W., true, to E.S.E. and wind from the tropical quarter, including the semicircle from E.N.E., true, to W.S.W.

We have before observed on the ambiguity of the signals, as regards direction, and we shall observe further on this subject below.

On the whole we think, notwithstanding these criticisms, that the Reports in question, and the analyses of them made by the Wreck Department, though far from perfect, as we shall point out below, afford the most valuable data which now exist for checking the correctness of the Storm Warnings, and for tracing the course and progress of violent gales in the British Isles, and we regret that they have not been duly made use of for this purpose, since, if they had, the Meteorological Department would probably by this time have been in possession of much precise and valuable information on the subject, which might possibly have placed the practice of predicting gales on a sound inductive basis.

31. *Results of the Comparison as regards Force of Wind.*

We proceed to give such results as we have been able to obtain from the digests already prepared in the Wreck Department from the returns made by Officers of Coast-guard and Customs; first, as regards force of wind, and secondly, as regards direction.

The returns from 1st July 1861 to 31st December 1861 were digested in a tabular form, which (as it has not been published) is printed in the Appendix.* The general result may be given as follows:—

FORCE OF THE WIND.

All Places warned from July to December 1861.						
No. of Warnings.	No. of Cases in which the Wind rose to Force 7,† or upwards.		Total Success.	No. in which it was at or above 7† at Time of Warning.	No. in which it did not reach 7.†	Total Failure.
	Within 36‡ Hours.	Above 36‡ and within 72 Hours.				
413	168 or 41 p. c.§	46 or 11 p. c.	214 or 52 p. c.	Not stated.	199 or 48 p. c.	199 or 48 p. c.

This result is, however, subject to correction. It is not stated in the analysis in how many cases the wind was blowing a gale when the signal was hoisted. If we suppose the number to have borne the same proportion to the whole as in the next tables, it would

* See Appendix, No. 13.

† In this first Table the "Warnings" were treated as successful in respect of Force if the wind actually reached the force 7; i.e., a moderate gale, in which a ship can carry double reefs, jibs, &c., &c. In the subsequent Tables it was thought right to treat them as successful only if the wind reached the force 8, i.e. "a fresh gale," or upwards. Force 8, according to the Beaufort notation, means "a fresh gale," in which a ship, if well found, manned, and navigated, will carry "triple reefs, &c." and will be well able to keep the sea. In compiling the tables for the Wreck Register the Wreck Department do not include under the head of "casualties arising from stress of weather" any cases in which a casualty happens when the wind is under force 9.

‡ We have given the gales within 36 hours as well as those within 72 hours, because we think that a warning to be practically useful ought not to extend over three days and three nights. Fifty warnings, each covering 72 hours, would extend over the whole winter.

§ In calculating the per-centages in this and the following Tables, fractions are omitted.

be about 20 per cent. If this be deducted from the 52 per cent. of success mentioned in the above Table, it will leave only 32 per cent. of success.

The same returns were analysed for the year 1863 by the Wreck Department, and the result has been printed in the shape of a Parliamentary Paper.* From this paper it appears that the results, given as nearly as possible in the same form as above, are as follows :—

FORCE OF THE WIND.

All Places warned in the Year 1863.						
No. of Warnings.	No. of Cases in which the Wind after the Warnings rose to Force 8 (i.e. a fresh Gale) or upward.		Total Success.	No. at which it was at or above 8 at Time of Warning.	No. at which it did not reach 8.	Total Failure.
	Within 36 Hours.	Above 36 and within 72 Hours.				
2,288	655 or 29 p. c.	167 or 7 p. c.	822 or 36 p. c.	462 or 20 p. c.	1,004 or 44 p. c.	1,466 or 64 p. c.

The analysis of the whole of these returns by the Wreck Department, which is a work of great labour, has not been carried on regularly since 1863.

But we have had two other analyses made in that Department in the same form ; the one for the whole of the ports, for the months of December in the three years, 1863, 1864, and 1865, and the other for 7 selected ports, viz., Aberdeen, Galway, Harwich, Holyhead, Plymouth, Shields, and Yarmouth, for the whole of the years 1863, 1864, and 1865. The detailed summaries thus obtained will be found in the Appendix.† The general result, given in the same form as above, is as follows :—

FORCE OF THE WIND.

All Places warned in December 1863, 1864, 1865.							
Periods.	No. of Warnings.	No. of Cases in which the Wind after the Warning rose to Force 8 (i.e., a fresh Gale) or upwards.		Total Success.	No. at which it was at or above 8 at Time of Warning.	No. at which it did not reach 8.	Total Failure.
		Within 36 hours.	Above 36 and within 72 hours.				
Dec. 1863 -	366	121 or 33 p. c.	77 or 21 p. c.	198 or 54 p. c.	25 or 7 per cent.	143 or 39 p. c.	168 or 46 p. c.
Dec. 1864 -	85	6 or 7 p. c.	6 or 7 p. c.	12 or 14 p. c.	6 or 7 per cent.	67 or 79 per cent.	73 or 86 p. c.
Dec. 1865 -	335	180 or 54 p. c.	33 or 10 p. c.	213 or 64 p. c.	40 or 12 per cent.	82 or 24 per cent.	122 or 36 p. c.

FORCE OF THE WIND.

Seven selected Ports. Years 1863, 1864, and 1865.						
Periods and No. of Reports received from the Seven Ports.	No. of Cases in which the Wind after the Warning rose to Force 8 (i.e. a fresh Gale) or upwards.		Total Success.	No. at which it was at or above 8 at Time of Warning.	No. at which it did not reach 8.	Total Failure.
	Within 36 Hours.	Above 36 and within 72 Hours.				
Year 1863, 254	73 or 29 per cent.	28 or 11 per cent.	101 or 40 p. c.	31 or 12 p. c.	122 or 48 p. c.	153 or 60 p. c.
Year 1864, 171	52 or 30 per cent.	18 or 11 per cent.	70 or 41 p. c.	8 or 4 per cent.	93 or 54 p. c.	101 or 59 p. c.
Year 1865, 236	65 or 28 per cent.	42 or 18 per cent.	107 or 46 p. c.	8 or 3 per cent.	121 or 51 p. c.	129 or 54 p. c.

* No. 200, Session 1864.

† See Appendix, Nos. 14 and 15.

Putting the general results of the above tables together in the form of per-centages, and omitting fractions, we have the following Tables, viz. :

PART 1.—ALL PLACES WARNED.

Periods of Warnings.	Gale within 36 Hours.	Gale between 36 and 72 Hours.	Total Success.	Gale blowing when Signal hoisted.	No Gale.	Total Failure.
Six Months ending 31st De- cember 1861 - - -	Per cent. 21	Per cent. 11	Per cent. 32	Per cent. 20*	Per cent. 48	Per cent. 68
Year 1863 - - -	29	7	36	20	44	64
Month of December 1863 -	33	21	54	7	39	46
Ditto 1864 -	7	7	14	7	79	86
Ditto 1865 -	54	10	64	12	24	36

PART 2.—SEVEN SELECTED PORTS.

Periods of Warnings.	Gale within 36 Hours.	Gale between 36 and 72 Hours.	Total Success.	Gale blowing when Signal hoisted.	No Gale.	Total Failure.
Year 1863 - - -	Per cent. 29	Per cent. 11	Per cent. 40	Per cent. 12	Per cent. 48	Per cent. 60
Do. 1864 - - -	30	11	41	4	54	59
Do. 1865 - - -	28	18	46	3	51	54

These tables show that, putting the most favourable construction on the Warnings, viz., that they are to be deemed successful if a gale follows within "two or three days";† there are two of the periods we have selected for comparison, viz., December 1863 and December 1865, in which as much as one half of the Warnings have, so far as regards Force of Wind, proved successful; and that in other periods the proportions of successes to failures has been less than one half. The same Tables also show that if we were to deem these Warnings successful only when a gale has followed within 36 hours, the proportion of successes to failures would be considerably less. On the other hand there is a marked improvement in the Warnings for the month of December 1865, over those of the month of December in previous years; and on the whole there is an improvement in the later over the earlier warnings.

32. *Results of the Comparison as regards Direction as well as Force of Wind.*

As regards Direction, the tests are far less precise and less satisfactory.

We have before observed on the difficulty of interpreting the Warnings as regards Direction. Whether a cone with the point downwards means what laymen and seamen would usually know as a southerly gale, viz., from some quarter between S.E. and S.W., or a gale from some quarter in the semicircle from E.S.E. by S. to W.N.W., or a gale commencing at some point in this semicircle, and afterwards shifting into the other or Northern semicircle; and how, if this latter interpretation is correct, the cone differs from a drum, it is impossible to understand from the published notices; and it is therefore impossible to make a perfectly satisfactory selection of the facts with which such indeterminate predictions should be compared.

In the analyses‡ above referred to an attempt was made to give Direction as well as force, and a column was inserted accordingly for that purpose. But in making these analyses no notice at all was taken of the Drum as indicating Direction; and in the column in question warnings made by that signal were omitted altogether.

The figures given in this column in the analysis are therefore for this reason very incomplete. In addition to this the only datum given in the Diagrams from which these analyses are made as to Direction of Wind, is its Direction at the moment of its highest force, and consequently, as regards the North and South cone signals, the method adopted in framing those analyses was to take the direction of the wind at its highest point, the wind being at that time of not less than the force 8, or a gale, and to see whether at that time it was blowing from some point within the semicircle which the cone was supposed to indicate. This again gives a very imperfect result. To know the true

* This is assumed, see above, page 29.

† This is Admiral FitzRoy's own expression.

‡ See App. Nos. 13, 14, and 15, and Parl. Paper, No. 200, Session 1864.

Direction of a gale it must be watched throughout its duration, and not only at its highest point. For these reasons we have not relied on the figures in question, and think it useless to tabulate the results here.

We have, however, had the returns made to the Wreck Department for the two ports of Shields and Plymouth, for the three years 1863, 1864, and 1865, analysed and put into the form of diagrams by that Department in such a manner as to show not only the force but the Direction of the Wind at each 4-hourly period of observation for 72 hours after the hoisting of the Signal. We have also had a similar analysis made of the returns from five selected ports, viz., Aberdeen, Galway, Harwich, Holyhead, and Yarmouth, for the month of December in each of the years 1863, 1864, and 1865.* Comparing the results thus obtained with the warnings, and putting the best interpretation we can upon the official explanations of the Signals, we have the following result:

DIRECTION AS WELL AS FORCE OF WIND.

Places and Periods.	No. of Warnings and their Results.			Character of Warnings.		No. and Range of actual Gales.		
	Total Number of Warnings.	Right.†	Wrong.	Drum alone or with Cone.	Cone alone.	Total Number of actual Gales.	Gale within $\frac{1}{4}$ of Circle.	Gales over more than $\frac{1}{4}$ of Circle.
<i>Five selected Ports.</i> December 1863, 1864, and 1865.	61	16	45	29	32	31	22	9
<i>Plymouth.</i> Year 1863 -	35	2	33	21	14	9	7	2
Do. 1864 -	25	6	19	10	14	9	7	2
Do. 1865 -	33	6	27	26	8	19	17	2
<i>Shields.</i> Year 1863 -	38	7	31	32	6	33	28	4
Do. 1864 -	21	7	14	12	9	13	8	5
Do. 1865 -	31	11	20	27	4	27	20	7
Total - - {	244	55 or 23 per cent.	189 or 77 per cent.	157 or 64 per cent.	87 or 36 per cent.	140	109 or 78 per cent.	31 or 22 per cent.

It thus appears that out of the whole of these Warnings, combining Direction with Force, 244 in number, not more than 22 per cent. or less than one quarter, have been right, whilst the remainder, or more than three-quarters, have been wrong. If these instances are fair examples, and there seems to be no reason to doubt it, we cannot hesitate in coming to the conclusion that the attempt to issue Predictions combining the Direction of coming Gales with their Force has been unsuccessful.

This Table affords a good illustration of what we have said above‡ concerning the advantages which the Department has forfeited by not keeping up a strict comparison of Predictions with facts. It will be remembered that, according to the meaning put by Admiral FitzRoy on his published explanation of the Storm Warnings,§ the cone with the point upwards signifies a gale from the Northern or Polar quarter; the cone with the point downwards, a gale from the Southern or Tropical quarter; and the Drum a gale from various directions, or from both quarters. And it also appears from the above Table that out of 244 signals no less than 157, or 64 per cent., were Drums. On the other hand it appears from the same Table, that out of 140 cases of gales reported to have followed these 244 Warnings there were only 31 or 22 per cent. which ranged through more than one quarter of the circle, or eight points of the compass, whilst the remaining 109 or 77 per cent. were confined within that limit. Had such a result been observed by the Department, and duly confirmed by further observations, it must have led them to the conclusions,—First, that their present Warnings for direction are in themselves far too wide and vague, and that if they are to correspond with the facts, they must

* An example of one of these diagrams is given in the Appendix No. 16.

† In the column headed "Right" in this Table are included all those cases in which the wind reached 8 or a gale, and whilst at that force agreed with the Signal. In the column headed "Wrong" are included those cases in which the Wind did not reach 8, as well as those in which it reached 8 but did not agree with the Signal. It is hardly necessary to repeat what we have stated above at page 27, that the Warning of the Direction of a coming gale cannot be right if there is no gale at all.

‡ See p. 29.

§ See p. 26.

be made much more limited and precise; and secondly, that there must be something essentially wrong in maxims or methods which led them to use the Drum in so large a proportion of cases.*

It may, indeed, be said† that although the wind may have ranged within narrow limits at the particular station, yet that, if we had examined and compared the winds over a more extended area, we should have found that their direction had a wider range. We reply, in the first place, that strong winds are exceedingly uniform in their direction, excepting in the comparatively rare case of real cyclones; and, in the second place, we reply that the predictions do not give us the data for such an examination. If, in claiming to predict the weather at any station, the Department had given us materials for defining the limits within which such prediction was to be applicable we could have made the comparison throughout those limits; but no such materials are given, and unless the comparison is to be confined to the place at which the prediction is made it is impossible to know what comparison to make, or to make any that shall be free from objection.

33. *Incompleteness of Data for Comparison.*

In concluding this comparison of the Warnings with the facts, we must observe that we are under great disadvantages, not only in consequence of the ambiguities in the Warnings themselves, but from the want of a clear and continuous statement of the weather that has actually prevailed during the whole of the time since the Storm Warnings were first established.

If we had possessed such a statement, our task would have been comparatively easy. We should have been able to say when the Storm Warnings *ought* to have been sent, and when they *were* sent. A comparison between the two would have formed a strict criterion of the system.

But there exists no such statement adequate to our wants. We possess full and trustworthy data only of the weather that *succeeded* the Warnings, not of the weather that preceded them. We cannot therefore tell when the Warnings ought to have been sent. We can only learn whether or no the Warnings were justified by the weather that followed them. This is obviously an incomplete inquiry. It leaves out of consideration the chances of success due to mere haphazard, and it appears that these are considerable in the six winter months of the year; for at that time it is probable that gales are blowing to a sufficient extent to justify a Storm Warning in every ten days on an average, and on the other hand, four days in every ten on the average, are placed under warning by the Storm Signals.

Our examination is therefore imperfect, but nevertheless it leads to conclusions which may be regarded as true, within those limits to which it is necessary they should be narrowed in order to give a general opinion of any value. We have tested the system under numerous independent aspects, and the results corroborate one another sufficiently to justify us, whilst expressing our regret that we are unable to arrive at more precise conclusions, in giving to the question, "How far are the Storm Warnings correct?" the following approximate reply, viz., that the Warnings, so far as they indicate Force of Wind, are sufficiently correct to be of some present value, and that they hold out the prospect of becoming more valuable; but that, so far as they indicate Direction of Wind combined with Force, they are not sufficiently correct to be of any value.

34. *Popularity and Utility of Storm Warnings.*

As regards the popularity and utility of these Storm Warnings, we have no doubt that they have been favourably received by the public in general as well as by those who are most interested in them. Though the replies made to inquiries by the Board of Trade in 1862 and published in the Reports of the Meteorological Department for that year are not unanimously or universally favourable, they undoubtedly show a general desire at that time that the experiments then commenced should be continued. And, from inquiries we have made through trustworthy persons at most of the principal ports, we find that seafaring men look upon them more favourably than they did at first, that they believe them to be more correct, and rely upon them more; and that there

* It is needless to point out how interesting are the questions to which such observations as the above would naturally lead, *e.g.*, Can the above result concerning the limited range of ordinary gales be confirmed by further observation? If so, what are the points of the compass between which these limited gales generally range? Are there any, and what premonitory symptoms by which they can be distinguished from each other or from gales of a wider range?

† See p. 29.

would be great regret if they were discontinued. In the Appendix will be found a short abstract of the answers to our inquiries, which are, almost without exception, favourable.* The existence of this feeling is strong evidence of the utility of these Storm Warnings. But in estimating this at its true value it must not be forgotten how eagerly the world at large is disposed to base an unreasoning belief on the occasional successes of weather predictions, and how easily it forgets the failures. We need not say that we do not wish for a moment to compare the efforts of the Department with the predictions of the ordinary weather prophets who attempt to connect the changes of weather with the stars or the changes of the moon. It is not, however, irrelevant to refer to these prophecies, and to the belief which has been so often placed in them, when we are estimating the value of popular feeling as evidence of the value of the Storm Warnings.

There is, however, no need to have direct evidence of their utility, if it can be shown that they are intelligible, definite, and, above all, correct. These points we have discussed at length above. And it is desirable in this place, when specially discussing their utility, to point out some of the practical applications of the observations which we have already made on this subject.

In the first place, the wants of different vessels with respect to these warnings are not the same. To a ship of war, a powerful steamer, or a large and well-appointed long-voyage merchant ship, the knowledge of a coming gale has a different meaning from that which it has for a laden collier or a fishing smack. To the former, to remain a day or two unnecessarily in port may be a matter of comparative indifference; to the latter it is the loss of the small margin of daily profit by which they exist. To the former again, if compelled, as in the case of regular steamers, to leave port at a particular time, it simply means, "Be cautious; have your cargo properly stowed, and your crew in order, and be on the look out for bad weather." To the latter it may be a matter of life and death. The former will only be a day or two earlier or later on her voyage accordingly as she starts on a given day or not. The latter may, if she waits for the commencement of a gale foretold three days beforehand, lose the opportunity of completing her one, two, or three days' voyage in fair weather, and may even delay just long enough to place herself in danger. And it must be remembered that the warnings, according to the present system, cover a considerable part of the year. In the six winter months about 40 per cent. of the days are under warning. These points are well put in the following reply made in 1861 by Mr. Maclean, Collector of Customs at Yarmouth, to the question put to him, "Are they (the warnings) found to be practically useful?" He says,—

On this point also there are divers opinions. When the warning signal is hoisted the fishing vessels, in some cases, have refused to proceed to sea, although no local circumstances appeared to indicate danger or to warrant apprehension of bad weather. And as these voyages often do not exceed 24 hours' duration, much time and profit are lost. Others think that the signals have a tendency to make the mariners timid. And there appears also a wish to have the time of the expected storm more defined. For instance, a vessel whose destination might be reached in 20 hours, if in a direction contrary to that from whence the storm is anticipated, might make her voyage, whilst delay would be the cause of the storm overtaking her. This actually occurred to two vessels which were ready to sail from this during last autumn. The one that pushed on notwithstanding the storm signal being up reached her destination in safety; the vessel which delayed to sail and put to sea afterwards was caught in the storm and was lost. I must, however, especially remark one way in which these warning signals appear to be extremely useful, and that is, although the masters of vessels may put to sea, yet knowing that a storm is pending, they are careful to see that all is right or snug before retiring to rest at night, and are in a measure prepared to jump on deck on the first symptoms of bad weather. The telegraphist informs me that he has many personal applications from masters of vessels for information and advice relative to these signals, which he considered will ultimately be of great value to the seafaring community.†

It follows from these considerations that the time within which a gale may be expected after the signal is of primary importance in considering the utility of the storm signals to coasters and fishing vessels, *i.e.*, to that class of vessels which are most likely to suffer from storms; and that to be of real use to this class of vessels, the signal ought to be hoisted not more than, say, 36 or at the outside 48 hours, before the storm is expected.

Again, the utility of the signal depends in many instances on the precision and correctness with which they indicate direction. For instance, a collier from the Tyne or the Wear will care little for a westerly gale, whilst an easterly one may be fatal to her. It is of no use to tell her that a gale is expected from the Tropical quarter or from the Polar quarter; that it will range from E.S.E. by S. to W.N.W., or from W.N.W.

* See Appendix, No. 17.

† See Report of Meteorological Department for 1862, p. 8.

by N. to E.S.E. A N.N.W. or a S.W. wind will do her little or no harm. A N.E. or a S.E. gale may alike be fatal to her. In such a case the present attempt to foretell direction can be of little use, even if it corresponds with the subsequent facts. But that it does not so correspond is shown by the figures we have given above. We think, therefore, that the utility of these signals in point of direction is not established, and we believe that the knowledge requisite to make them precise in this respect, and therefore useful, does not at present exist. At the same time we recognize fully the importance of foretelling direction as well as force, and we trust that more accurate observation and more careful use of the materials already on hand may, at some future period, lead to a more successful result.

35. *Conclusions as to Correctness and Utility of Daily Forecasts and Storm Warnings.*

The conclusions we draw from this discussion are the following, viz. :—

That the maxims on which the Department acts in foretelling weather have not been reduced into any clear or systematic form, and are not shown to have been established by sufficient induction from observed facts.

That as a matter of fact the Daily Forecasts are not shown to be correct, and that they are not, in our opinion, useful.

That the Storm Warnings, so far as they indicate the Force of coming gales, have been sufficiently correct to be of some use, and that their utility is widely admitted. Also that they have improved; and that they are probably capable of still greater improvement.

That the Storm Warnings, so far as they indicate the Direction as well as Force of coming gales, are not shown to have been so far precise or correct as to be of use.

36. *Fishery Barometers.*

In completing our statements of what the Meteorological Department has done with the object of warning sea-faring men against bad weather, it is right to call attention to one important step taken by it, viz., the supply to the smaller and less affluent sea-ports or fishing villages of good barometers, with directions for observing them, and drawing conclusions as to possible weather. Ninety-five of these Barometers have been thus supplied.

37. *Investigation of Laws which govern Changes of Weather in the British Isles.*

It seems to us obvious that under these circumstances the practice of issuing Storm Warnings can neither be discontinued nor allowed to continue in its present unscientific, and therefore unsatisfactory, condition. It can never be satisfactory until we have arrived at a more complete knowledge of the laws which govern the changes of Weather in the British Isles than we now possess. This subject has of late years become, chiefly through the strenuous exertions of Admiral FitzRoy, the most popular branch of Meteorology. It also affords one of the hopeful matters of inquiry to the scientific Meteorologist.

It is obvious, from what we have said above, that the Meteorological Department of the Board of Trade does not at the present time possess, and has not the means of procuring, observations sufficiently numerous and accurate for the prosecution of this inquiry.

38. *Recommendation of Six Stations, with Self-Recording Instruments.*

The Royal Society have, in their letter to the Board of Trade of the 15th June 1865,* recommended the establishment in the British Isles of six stations with Self-Recording Instruments, for the purpose of making and recording full, accurate, and *continuous* observations of Meteorological phenomena at those stations.

There is no doubt that Self-Recording Instruments are urgently needed in the present state of Meteorological science, and that they will soon in all probability be largely employed both in this country and abroad. Their advantages are manifest. By reason of the continuity of their records no wave or variation of any description in any of the Meteorological elements can escape notice, and the course of that wave or variation can be tracked with certainty from station to station, and its modification at the time of reaching each station in succession can be accurately observed. For the same reason one difficulty now seriously felt in charting the weather, viz., that which arises from observers in different places and countries adopting different hours of observation,

* See App. No. 1.

would wholly disappear; and a further difficulty, viz., that which arises from observers being unpunctual to their professed hours of observation, would disappear also. The unvarying accuracy of the record is an advantage of still greater importance than might be expected by those, who have had no experience of the frequent errors to be found in Meteorological Registers. Each error creates considerable confusion; it throws doubt on the observations accurately made at neighbouring places; and that doubt cannot be removed except by the continuity of the records at those places. This continuity is unattainable unless the weather happens to be uniform over a wide district, or unless observations are made at many more places than would be needed, if reliance could be placed upon the accuracy of the observers. Another advantage of Self-Recording Instruments is that their records are independent of particular scales. Their notation is in lines and curves, that can be measured with equal facility according to any desired scale. The Thermometer lines could be measured at pleasure according to Fahrenheit's scale, as used in England; to the Centigrade, as in France; or to Reaumur's, as in Germany. The Barometer lines could be measured with equal ease in English inches, in Millimetres, or in Paris feet. For the various reasons we have mentioned Self-Recording Instruments are of eminent local and international utility. The establishment of a series of them in England would confer a wide benefit. They would give precision and fullness to the charts of our own weather; they would set an example, that foreign Governments would probably soon follow; and they would afford material in a very acceptable form to Meteorologists at home and abroad for the discussion of the weather of Europe at large.

39. *Further Observations from Lighthouses, Ships, &c.*

But returns from the six stations recommended by the Royal Society, though full, accurate, and continuous, will not be sufficient in themselves to give a complete account of the diversified phenomena of wind, clouds, and temperature in the variable climate of the British Isles. They will operate as an invaluable framework, to be filled up by observations of a more ordinary character, and as a test of the value of such observations; but in order to complete the necessary data a considerable number of intermediate stations—say 60—will be required, and from these returns of the Wind's Direction and Force, of the Barometric Pressure, of the Temperature, and of the Difference between the Wet and Dry bulb Thermometer should be made, say four times a day, and in some few selected stations eight times a day. These observations should be uniformly made at stated hours, reckoned in Greenwich and not in local time.

There appears to be no difficulty in procuring such observations; they are already made at lighthouses, at some of which there are understood to be careful and intelligent observers. The instruments they employed could be verified by the Board of Trade, and the resulting observations would, no doubt, be placed by the Trinity House and Scotch and Irish Lighthouse Boards at the disposal of any Meteorological Office which could turn them to account. If observations were required from any place where there is no lighthouse, they might, no doubt, be procured through the Coastguard.*

It seems also advisable that observations should be sought from packet ships and other vessels continually navigating the seas adjacent to the British Isles, so as to complete the observations for a certain area of the earth's surface in the neighbourhood. This might, we hope, be done through the same instrumentality by which the Meteorological observations for the ocean are collected.

By these means the progress of all kinds of weather across the British Isles and the adjacent seas may be traced continuously and exhibited in the form of weather charts.

In ordinary weather this mass of observations need not be employed. A Weather Chart drawn once in 12 hours would be sufficient to give continuity to the records. But in weather of a marked type that undergoes rapid variations (as, for instance, in a storm whose centre moves at the rate of 20 miles in the hour,) the whole of the observations would be requisite.

But it is not sufficient for the purpose now under consideration to observe the weather of the British Isles alone.

The experience of Meteorologists, abundantly illustrated by the daily weather maps of M. Le Verrier, show beyond all doubt that the weather changes of England, and even of all Europe, are but parts of immense systems.

These systems reach southward to the trades, and with them far in the direction of the Gulf of Mexico, whilst they are of unknown extent to the North. The area of the North

* Experience may show that mechanical Self-Recording Instruments of far less cost than, and inferior precision to, those mentioned above, might be used with advantage for these secondary stations.

Atlantic, and especially of the Gulf Stream, appears to exercise a most important influence on the generation of the storms and weather changes that affect England.

Under a conviction of the importance of studying the weather on a sufficiently extended basis, M. Le Verrier is now engaged in producing charts of the Northern Hemisphere between the Equator and 70° N. lat., and long. 100° W. and 60° E. for each day of the year 1864.

We think it desirable that this country should take a share in inquiries of this description, proportionate to her means of obtaining information. The forms and movements of the ever-varying areas of high and low barometric pressures over the Atlantic are to be determined by comparatively few observations, and they would afford an aid of the utmost value to interpret the varieties of the storms, and of the weather generally, that first fall upon the western coasts of England and of France.*

40. *Discussion and Charting of Arrears of British Weather.*

We also think that the arrears of English weather, and especially of gales and marked weather generally, should be charted and discussed for about two years, that is as far back as M. Le Verrier's daily charts of European weather extend, using the daily telegraphic returns as a basis, and supplementing them, as far as may be found practicable, by the returns made to the Wreck Department of the Board of Trade, by the observations made at lighthouses, and by those of private observers.

In preparing and issuing the charts above referred to care should be taken to render them neat, compact, and cheap. Those published by M. Le Verrier appear to us to combine these qualities in a high degree.

41. *Results to be looked for from the above.*

As the science of weather-changes is so little understood and excites so much interest, it would probably be desirable to publish charts and discussed observations more freely at first than would afterwards be necessary. It is very much to be hoped that by these means the subject would attract the attention of men eminent in science, who are now repelled by the impossibility of obtaining information in a form they can use, without previously undergoing an excessive amount of purely clerical labour.

If these steps are taken we may hope that at no distant time the laws which govern the changes of weather in the British Isles will be so far understood as to enable Meteorologists to place the practice of foretelling weather on a sound basis. If a considerable proportion of the various states of weather can be grouped under definite categories, and if each of these categories is found to change into other definite states, with more or less regularity, it will only be necessary to determine the category under which the prevailing type of weather should be classed, in order to arrive at a knowledge of coming changes. And this may probably be done by means of a limited amount of telegraphic communication. To take the least favourable view of the subject, the knowledge obtained by means of the observations we have recommended will furnish a complete check on such predictions as may be made, and will either enable us to reduce the practice of foretelling Weather into a certain system governed by clear and intelligible rules, or will enable us to conclude that no such system or rules are possible.

42. *Recommendations.*

The following are our recommendations on the subject of Weather Telegraphy, Daily Forecasts, and Storm Warnings, and upon Observations of Weather within or affecting the British Isles, viz. :—

1. That the system of telegraphing the weather from distant stations, as proposed by M. Le Verrier, and adopted by that officer and by Admiral FitzRoy, be continued.
2. That the places from which telegrams are to be received shall be those from which they are at present received, with power to add to or diminish their number as circumstances and advancing knowledge may require.
3. That these telegrams shall be published as at present, but arranged in geographical districts.
4. That the publication of daily forecasts of weather probable on the North, East, South, and West coasts shall be discontinued.

* We may point out that the method of copying the observations made at sea, which we have already recommended for the purpose of obtaining meteorological means (see above, p. 9), would lend very great assistance to the branch of meteorology we are now considering. It would merely be necessary to take duplicate copies of the observations, either by means of the copying press or by a manifold writer, and to sort the duplicates according to dates. All the duplicates referring to a single day would be arranged under the same cover, following one another like pages in a book, according to the number of their Squares. They would be in a most convenient form for ready reference and to lay down upon a chart.

5. That the "Remarks" or summary of the general results of the telegrams, such as M. Le Verrier publishes in his Weather Bulletin, and such as Mr. Babington has recently appended to the daily Forecasts, shall be continued; but that the office intrusted with the duty shall not hold itself bound to issue such remarks daily as a matter of course, but shall only do so when it has reason to believe that there is some general view or some conclusion of interest to be derived from the reports.
6. That the practice of issuing Storm Warnings shall be continued, but with the following modifications:—
 - (a.) That the Signals shall for the present be confined to the indication of a probable gale, without attempting to indicate from what quarter.
 - (b.) That they shall not be hoisted unless there is reason to expect the gale within 36 or at the outside 48 hours.
 - (c.) That when hoisted, they shall continue up until all immediate expectation of further gales has ceased.
 - (d.) That whilst the Signals indicating Direction are discontinued for the present, care shall be taken so to arrange the Signals for Force as to enable the Signals for Direction to be added hereafter.
7. That the officer of the Meteorological Department issuing the Storm Warning for Force should also at the same time, so far as he is able so to do, make, but not issue or publish, a prediction of the probable Direction of the coming gale, endeavouring in so doing to render it as specific as possible, *e.g.*, whether within any particular quarter of the circle.
8. That this officer shall note down at the time, and reduce into an exact shape afterwards, the maxims or principles which have guided him in making the Signal of Force or Prediction of Direction; the facts to which those maxims are applied; the mode in which he has applied and combined them, the value he has attached to each of them, and the value of the probability which he has thus obtained, and which is indicated by the Signal or Prediction.
9. That the maxims so acted upon shall be reduced into a clear and definite shape, and kept in the office ready for reference.*
10. That the present practice of collecting miscellaneous information concerning daily weather from newspapers and other sources be discontinued.
11. That a careful check upon the correctness of the predictions issued for Force, as well as upon those made, but not issued, for Direction shall be kept. If the recommendations we have made with regard to the collection of observations of the weather changes in the British Isles be adopted, such observations will provide this check; otherwise the observations and returns heretofore made to the Wreck Department of the Board of Trade should be continued, but with the addition, that a return should be made from every station of every gale felt there, whether a Storm Signal is hoisted there or not.
12. In whatever way these observations are made, the result should in each instance be carefully digested and compared with the Prediction, and with the reasons for making it. In case of error or omission, whether as regards Force, Direction, Time, or Place, it should be noted; and an endeavour should be made to ascertain how it occurred, and the maxims acted on should, when necessary, be modified accordingly.
13. If the observations are collected and digested by an office distinct from that which issues the Storm Signals, the Signals, with the reasons for them, and the results of the observations, should be mutually communicated by the officers to each other, so that the one may be a check on and assist the other. In this way the practice may be brought into the shape of a determinate system resting on a sound inductive basis.
14. In the meantime the returns already obtained by the Wreck Department of the Board of Trade, though not complete, inasmuch as they are only made when and where a Storm Signal is hoisted, afford valuable material for tracing the rise, progress, and direction of most, if not of all, the violent gales which have happened in the British Isles during the last five years. These returns should, if possible, be digested and utilized.
15. *Finally, we recommend that the Variations of the Weather in the British Isles and in the adjacent Ocean be carefully observed, charted, and discussed. We have entered so fully into the subject above that it is needless here to repeat our recommendations. We will only add that of all our recommendations on this part of the subject, it is in our opinion the most important.*

* See Appendix No. 7.

PART III.

ESTIMATE OF COST.

43. *Cost of Existing Meteorological Department.*

We give in the Appendix* a full account of the cost of the Department from its institution in 1856 to the present time. The aggregate amount to the end of the financial year 1865 will have been about 45,000*l.* The annual expenditure has increased from 3,240*l.* to, say, 5,500*l.*; but was in one year, 1863-4, as much as 7,100*l.* The sums expended on instruments and other expenses connected with Ocean Statistics have greatly diminished, viz., from an average of 2,215*l.* 19*s.* 6*d.* for the years 1856 to 1860, to an average of 1,613*l.* 6*s.* for the years 1860 to 1865; whilst the expenditure has, in the latter years, been increased by a sum averaging 2,011*l.* a year spent on Telegraphy and Storm Warnings. The expenditure for 1864-5 was 1,144*l.* 14*s.* 8*d.* on instruments 2,735*l.* 10*s.* on Telegraphy and Storm Warnings, and 1,134*l.* 17*s.* on salaries, making 5,460*l.* in all.

44. *Recapitulation of Work to be done hereafter.*

We now proceed to consider in what manner and at what expense the work we have recommended can be done. That work is as follows:—

I. OCEAN STATISTICS.

1. Completion of work now in progress, viz.:

a. *Winds.*

Charts for South Pacific.

Charts of Trade Winds for Indian and Pacific Oceans.

Winds generally. Arrangement of existing "Collecting" and "Grouping" Papers.

b. *Ocean Currents.*

Arrangement of existing "Collecting" and "Grouping" Papers.

c. *Sea Temperature.*

South Atlantic. "Collecting" to be completed.

Arrangement of existing "Collecting" Papers.

d. *Temperature of the Air.*

Tabulation and publication of results already obtained.

Arrangement of existing "Collecting" and "Grouping" Papers.

e. *Vapour Tension.*

Publication of monthly means of wet bulb as already obtained, and making and publishing comparison of monthly means of wet and dry bulbs.

Arrangement of existing "Collecting" and "Grouping" Papers.

f. *Barometer.*

Publication of monthly means already obtained.

Arrangement of "Collecting" and "Grouping" Papers.

2. Issuing instruments and registers to merchant ships.

3. Extracting the whole of the observations now in the office, and such other observations as may be hereafter obtained, to the number of (say) 1,650,000, in the manner explained above.†

4. Reducing, digesting, and tabulating the observations so extracted.

II. WEATHER TELEGRAPHY: FORETELLING WEATHER: AND OBSERVATIONS AFFECTING WEATHER IN THE BRITISH ISLES.

1. Telegraphing to and from out-stations.

2. Examining telegrams daily for the purpose of remarks and of Storm Warnings, and recording progress.

3. Establishment and maintenance of six stations for Meteorological Observations in the British Isles.

4. Collection of observations from lighthouses or other intermediate stations and from the Atlantic.

5. Digesting, tabulating, charting, and publishing the results.

45. *Means and Method of Executing this Work.*

It is not within our province to suggest alterations in a Government Office, still less to propose the establishment of a new Office. But we can hardly estimate the cost of what we recommend without forming an hypothesis as to the way in which it should be done, and in forming such an hypothesis we have adopted what appears to us to be the most efficient as well as the most economical plan.

* See Appendix, No. 18.

† See pp. 6 and following.

The collection of Observations from the captains of ships is a function which can probably best be performed through the medium of such agencies as a Government Office can command, and which was in fact well performed by the Meteorological Department before its attention was devoted to the practice of foretelling weather. We assume, therefore, that this function will remain with the Board of Trade.

The Digesting and Tabulating Results of Observations is on the other hand a function which requires a large knowledge of what the state of the science for the time being requires, as well as exact scientific method. This function is one that has not been satisfactorily performed by the Meteorological Department. And we believe that it would be much better as well as more economically performed under the direction of a scientific body,—such as a Committee of the Royal Society or of the British Association, if furnished with the requisite funds by the Government,—than it will be if left to a Government Department. The establishment already existing at Kew might probably be easily developed so as to carry into effect such a purpose. It would in that case become a Meteorological centre to which all observations of value, whether made on land or at sea, and whether within the British Isles or not, would be sent for discussion and reduction. We have, therefore, in the following estimates assumed that all Meteorological Observations made on land, whether at the stations recommended by the Royal Society, or at the Lighthouses or Coast Guard Stations, as well as all observations at sea, shall be referred to and discussed under the direction of such a scientific body as we have mentioned; and we have also assumed that the aid afforded by Government would be in the shape of an annual vote so made as to leave the Royal Society, or other scientific body charged with the duty, perfectly free in their method and in their choice of labour, but upon the condition that an account shall be rendered to Parliament of the money spent and of the results effected in each year.

The completion of the work now in progress in the Meteorological Department may, on the above hypothesis, either be performed by that Department at once, or if the proposed change be made immediately, may be placed in the same hands in which the future discussion of Meteorological Observations is placed, and we have, in our estimates, dealt with it accordingly.

The procuring and sending of daily telegrams, and the issuing of Storm Warnings, is intimately connected with the discussion of Meteorological Observations in or near the British Isles, and ought, we think, to be placed under the same scientific body which superintends the discussion of those observations. For the convenience of telegraphing it will probably be necessary that part of the staff employed under this body, whilst in connexion with Kew, should occupy two or three rooms in London. But any expense in hiring such rooms will be less than the expense of the premises at present occupied by the Meteorological Department, which are, we understand, to be pulled down, whilst the persons employed for a part of the day on telegraphy, will be available during the greater part of the day for the discussion of observations.

The publication of results of Meteorological Observations at sea, which are of immediate utility to navigators, either in the shape of charts or otherwise, appears to be a function properly belonging to the Hydrographic Office of the Admiralty. We have accordingly assumed that it will be performed by that Office.

a. Estimated Cost of this Work.

On these assumptions we make the following estimate :—

Ocean Statistics :

	£
Issue of Instruments and Registers, annually - - -	1,500
Discussion and publication of results - - -	1,700
Total -	3,200

This expenditure ought to terminate in about 15 years, as by that time a sufficient number of observations to determine the Meteorological Means will have been collected and discussed.

Weather Statistics in and near the British Isles :

Six Stations with Self-Recording Instruments : Collecting Observations from intermediate Stations, Lighthouses, Ships, &c. ; discussing Observations, Charting, and publishing Results, annually - - -	4,250
Besides an outlay, to begin with, of 2,500 <i>l.</i> and whatever sums may be needed for additions to the buildings at Kew.	
Telegraphy and Storm Warnings, annually - - -	3,000
Grand total annually - - -	10,450

As regards expenses to be incurred by the Hydrographic Department in getting out and publishing charts, &c., for the immediate use of navigators, we are unable to say with precision what it may be found necessary to do, and we are therefore unable to give an estimate.

46. *Reasons for proposed Increase of Expense.*

The expense of what we propose is larger than the expense hitherto incurred. But this is unavoidable unless either the original object of the Meteorological Department or the system of Storm Warnings is to be abandoned. The Meteorology of the ocean is, as we have stated, as important an object now as it was in 1854; and we feel ourselves justified in believing (especially with such a promise of success as is held out by the Meteorological Registers already collected) that the Government and Parliament will not now abandon an object taken up by them after much consideration in 1854, and that they will not be satisfied to leave the matter in its present incomplete and useless condition. If the grant originally made had been steadily applied to this object and had not been diverted to other objects, the work would by this time have advanced far towards completion; and we do not doubt that it may be completed within the time, and for the sum we have mentioned above.

The prognostication of Storms is a branch of practical Meteorology which has been superadded to the original Functions of the Department, and to which a large part of the funds originally granted for the purpose of Meteorological Observations at Sea has been devoted. It is one far too important, too popular, and too full of promise of practical utility to be allowed to die. But the present treatment of it is, as we have shown, incomplete and unsatisfactory, and it cannot be made complete or satisfactory without the new system of observations, and consequent additional expense, which we have recommended.

These Observations are the foundation; the Telegraphy and Storm Warnings are the superstructure; and we have no hesitation in saying, in the interest of practical utility as well as of science, that if the expense we have recommended is thought to be too large, and any part of what we have proposed is to be postponed for the present on account of expense, the part to be postponed should be that part which recommends the present continuance of the attempts to prognosticate weather. To continue them in their present condition without an endeavour to determine the principles and rules on which they should be founded, would, in our opinion, be injurious to the fame of the eminent officer who has originated them and discreditable to the country.

For these reasons we have no hesitation in making the various proposals mentioned above, and in recommending the consequent increase of expenditure.

CONCLUSION.

47. *Answers to Questions put to us.*

In conclusion, we give seriatim in a concise form answers to the questions which have been put to us; but the nature of the subject renders it difficult to make these answers intelligible without reference to the more ample statements contained in the earlier parts of our Report.

Question 1. *What are the data, especially as regards Meteorological Observations at Sea, already collected by and now existing in the Meteorological Department of the Board of Trade?*

These data are described at length in Part I. of our Report.* As regards Meteorological Observations at Sea, they consist of about 550,000 observations, mostly, if not entirely, of good quality, contained in 1,298 Registers. The remaining data are of a miscellaneous character. Some of these data have been extracted and partially discussed by the Department, and some of the results have been published. But we think, for the reasons given above,† that this has been done in an imperfect manner.

Question 2. *Whether any and what steps should be taken for arranging, tabulating, publishing, or otherwise making use of such data?*

We are decidedly of opinion that steps should be taken for extracting and discussing the Meteorological Observations at Sea already existing in the Department, in common

* See pp. 6, 13, and 14.

† See pp. 8, 9 and 11.

with further observations to be taken hereafter. As regards the discussions and publications now in progress in the Department, we think that they should be brought to a close as soon as possible in the way pointed out above.* The process of extracting and discussing the observations on a better plan should be commenced *de novo*, and carried on till the work is complete in the manner indicated above.†

Question 3. *Whether it is desirable to continue Meteorological Observations at Sea, and if so, to what extent, and in what manner?*

We are of opinion that it is desirable to continue Meteorological Observations at Sea until a sufficient number of observations has been obtained to fulfil the requirements of the Royal Society for the accessible parts of the ocean.‡

Question 4. *Assuming that the system of Weather Telegraphy is to be continued, can the mode of carrying it on and publishing the results be improved?*

The system of Weather Telegraphy and of Foretelling Weather is not in a satisfactory state. It is not carried on by precise rules; and has not been established by a sufficient induction from facts. The Storm Warnings have, however, been to a certain degree successful, and are highly prized. We think that the Daily Forecasts ought to be discontinued, and that an endeavour should be made to improve the Storm Warnings, to define the principles on which they are issued, and to test those principles by accurate observation. Above all, we think that steps should be taken for establishing a full, constant, and accurate system of observing changes of Weather in the British Isles. Our detailed recommendations on these heads are given at the end of the Second Part of our Report.§

Question 5. *What Staff will be necessary for the above purposes?*

The answer to this question will be found at length in Part III. of our Report.||

The cost of what we propose will be (say) 10,500*l.* a year, besides 2,500*l.* for outfit. Of the annual expense, 3,200*l.* should cease after 15 years.

48. *Weather Changes in all Parts of the World.*

We are aware that there is a still wider view of the whole subject of Meteorology and the phenomena connected with it, which we, limited as we are to the special functions of the Meteorological Department, can only glance at. Considering the wide extension of civilization and of British colonization and influence, it seems only reasonable that we should possess some regular record of the broad peculiarities of all the great weather changes that affect the globe. A knowledge of the varying regions of exceptional drought, of wet, of heat, or of cold, of the deflection of normal currents of air or of sea; of the variation in the limits of the polar ice and of other phenomena is required; and for this purpose much more of course will be needed than either the Ocean Statistics, referring to constant values, or the weather changes in and near the British Isles, limited as they are in their local area, which form the special subjects of our recommendations.

To obtain such a record it will be less necessary to create new stations of observation than to utilize the scattered efforts that are now made in extraordinary abundance, by bringing them, as it were, to a focus.

We look forward to the establishment at no distant period of a regular record of the Weather changes over the greater portion of the globe, through international effort, and especially by means of the observations of British subjects on shore and afloat; but for the present we make no recommendations on the subject, neither do we make any recommendations for the present on the publication of the five-day means of temperature at all fixed stations, recommended by the Royal Society in their letter of the 22d February 1855, or of the anemometrical records at five stations also mentioned in that letter, for we feel that these have their chief interest as being parts of the larger subject.

If, however, the suggestions we have made in Part III. with respect to Kew be adopted, we trust that it may prove to be a step in this direction. And we think that it may probably be found well worth while for such an Establishment to copy the Cards of Observations extracted from the Meteorological Registers in duplicate and to sort the duplicates according to date, so that trial charts of the Weather at given epochs over the whole globe, may, so far as such observations prove sufficient for the purpose, be occasionally made and published.

* See pp. 15, 16.

§ See p. 37 and following.

† See pp. 9, 10, and 16.

|| See p. 40.

‡ See pp. 5, 7, and 11.

49. *Periodical Revision.*

Assuming that the above recommendations are adopted, we recommend in addition that not more than three years shall be allowed to pass without a further inquiry into the manner in which the work is progressing. The collection and discussion of Meteorological statistics, however valuable in its ultimate results, is work of little immediate interest to the public, and is very likely, as past experience proves, to be neglected or postponed, especially in a Government Department, for objects appearing to be more immediately practical or popular. But it is on numerous exact and careful observations, and upon these alone, that the discovery of the laws which govern the atmosphere can be based; and practical results can be of little or no value unless they are founded on a knowledge of these laws. We, therefore, regard it as a matter of the utmost importance, practically as well as scientifically, that the progress made in collecting and discussing observations should be periodically reviewed and reported on.

50. *Final Remarks.*

Finally, we think it due to the Meteorological Department of the Board of Trade, and to ourselves, to make the following remarks. We have stated, without reserve or hesitation, our opinion concerning what we cannot but think to be defects in the practice of the Department, both as regards the discussion of Ocean Statistics and the system of Foretelling weather. But we should be doing great injustice to the Department, and especially to Mr. Babington, upon whom, since the commencement of Admiral FitzRoy's last illness, the burden and responsibility has mainly rested, if we did not express our strong sense of the intelligence, as well as of the zeal and industry, which the Department has evinced; and we think it only just to say this, lest in condemning what we believe to be defective methods, we should be supposed to intimate that there is in the Department or in its present head, any incapacity for properly fulfilling, under proper guidance, such functions as it may be thought proper to intrust it with.

We feel, moreover, that we should be doing great injustice to ourselves if we were to allow it to be supposed that we undervalue either what the late Admiral FitzRoy attempted or what he effected. To his zeal and perseverance is due the credit of establishing a system of Storm Warnings, which is already highly prized by the seafaring class. And if a more scientific method should hereafter succeed in placing the practice of Foretelling weather on a clear and certain basis, it will not be forgotten that it was Admiral FitzRoy who gave the first impulse to this branch of inquiry, who induced men of science and the public to take interest in it, and who sacrificed his life to the cause.

FRANCIS GALTON.

THOMAS HENRY FARRER.

FREDERICK JOHN EVANS.

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APPENDIX No. 1.

CORRESPONDENCE between the BOARD of TRADE, the ROYAL SOCIETY, and the ADMIRALTY, from which the present Inquiry originated.

SIR,

Board of Trade, 26th May 1865.

I AM directed by the Lords of the Committee of Privy Council for Trade, on the occasion of the vacancy in the office of chief of the Meteorological Department, caused by the untimely death of Admiral FitzRoy, to request you to be so good as to bring under the notice of the President and Council of the Royal Society the correspondence which took place between that Society and this office at the time of the institution of the Meteorological Department as a branch of this Office, and particularly your letter of the 22nd of February 1855, in reply to that from this office of the 3rd of June 1854, in which, when about to institute the Department, my Lords had desired the opinion of the Royal Society as to what were the great desiderata in meteorological science. The recommendations of the Royal Society, conveyed in your letter of the 22nd of February 1855, were adopted as the basis of the proceedings of the Meteorological Department, instruments were provided, logs were prepared, furnished, and returned to the Office, and some progress was made in carrying into effect the original programme.

But in 1859 or 1860 the French Government having adopted a system of telegraphing and publishing the actual state of weather from one place to another, co-operation in which was urged on the Board of Trade by a Committee of the British Association and by Admiral FitzRoy, my Lords gave their sanction to what was proposed, and thenceforward a considerable part of the vote previously applied to obtaining and digesting observations was diverted to these telegrams. In 1861 Admiral FitzRoy grafted on this system of telegraphic communication a system of forecasting the weather, the forecasts being published in the daily papers, and, on occasion of anticipated storms, the giving of special warnings communicated by telegraph to the different ports, and there made known by hoisting certain signals. The whole, or almost the whole, of the funds originally voted for the purpose of observations were thus diverted from their original scientific object to an object deemed more immediately practical.

In 1863, on the occasion of an increased estimate for the purpose of these forecasts, it was determined to compare the forecasts and the warnings with the actual results.

As regards the daily forecasts, the daily reports of weather published by Admiral FitzRoy afforded and still afford ample means of checking them.

As regards the storm warnings detailed reports were called for from the places to which the warnings were sent. The results of these comparisons, for certain periods, were tabulated and laid before Parliament in a paper, copy of which is annexed. The data for continuing the return are still kept, and if it were thought right to incur the expense, it could be continued at any time.

My Lords at the same time addressed a further letter, dated 27th February 1863, asking the opinion of the Royal Society as to the course then being pursued by Admiral FitzRoy, and were favoured, in reply, by your letter of the 27th March 1863.

The vacancy in the Meteorological Department occasioned by the death of Admiral Fitz Roy has seemed to my Lords to present a fitting opportunity to review the past proceedings and present state of the Department, and with this view they are desirous of receiving any observations or suggestions with which the President and Council of the Royal Society may be willing to favour them on the constitution and objects of the Department, and the mode in which those objects may be most effectually attained.

The points on which the Board of Trade especially desire the opinion of the Royal Society are the following :—

1. Are the objects specified in the Royal Society's letter of the 22nd February 1855 still as important for the interests of science and navigation as they were then considered?
2. To what extent have any of these objects been answered by what has already been done by the Meteorological Department?
3. What steps should be taken for making use of any observations already collected or any compilations already made by the Department?
4. Is it desirable to make any, and what, further observations on any, and which, of the subjects mentioned in the Royal Society's letter of 22nd February 1855?
5. What is the nature of the basis on which the system of Daily Forecasts and of Storm Warnings established by Admiral FitzRoy rests? In other words, are they founded on scientific principles, so that they, or either of them, can be carried on satisfactorily, notwithstanding Admiral FitzRoy's decease?
6. If they, or either of them, can be carried on satisfactorily, can the Royal Society suggest any improvement in the form and manner of doing it?
7. Is it desirable to continue down to the present time the tables of results corresponding to the Forecasts and Storm Warnings which were made out for certain periods in the year 1863, and were presented to Parliament in April 1864? The materials for doing this exist in the office, and only require clerical labour.
8. Assuming it to be desirable to continue the publication of the daily reports of weather received from various stations, can the Royal Society make any suggestions as to the extent to which it should be carried and the form in which it should be done?

* Parliamentary Paper, No. 200, Session 1864.

9. Have the Royal Society any general suggestions to make as to the mode, place, or establishment in, at, or by which the duties of the Meteorological Department can best be performed?

With respect to these heads of inquiry, my Lords desire to observe, in the first place, that they understand that the Admiralty are willing to undertake and to place in the hands of their Hydrographer all those observations which can properly be made use of in framing charts for purposes of navigation, but not those which relate to meteorology proper.

Secondly. That the Board of Trade will gladly place the knowledge and services of Mr. Babington, Admiral FitzRoy's second, at the disposal of the Royal Society, for the purpose of the above inquiries, and will also give them any help, clerical or otherwise, which the Royal Society may require, and which the Board of Trade may be able to give.

I have the honour to be, Sir,

Your obedient servant,

(Signed) T. H. FARRER.

The President, Royal Society.

The Royal Society, Burlington House,
June 15, 1865.

SIR,

IN replying to your letter of the 26th of May, the President and Council think it may be desirable to advert, in the first instance, to that which has constituted the chief occupation of Admiral FitzRoy's department in the last four or five years, viz., the systematic forecasting of the weather by means of telegrams received from stations comprised within a certain limited area; and, on occasions of anticipated storms, the giving special warnings conveyed by telegraph to the different ports in the United Kingdom, and there made known by hoisting certain signals.

The system of forecasting which Admiral FitzRoy instituted and pursued has been expressly described by himself as "an experimental process," based on the knowledge conveyed by telegraph of the actual state of the winds and weather and other meteorological phenomena within a specified area, and on a comparison of these with the telegrams of the preceding days, so as to obtain inferences as to the probable changes in the succeeding days. The proper test of the efficiency and usefulness of such a system of cautionary signals at the different ports is to be sought in the *measure of success which it appears to have attained*; always remembering that the system under consideration can only be regarded as in its infancy, and that, if continued, its improvement, and consequently its importance, may be expected to be progressive from year to year. In Admiral FitzRoy's Report to the Board of Trade, in May 1862, the opinions of the shipmasters at several ports in regard to the practical value which they attached to the storm-signals were given at length. Of the 56 replies published in the Appendix of that Report, 46 were decidedly favourable, three decidedly unfavourable, and seven expressing no decided opinion. A statement so favourable on the whole, obtained so very shortly after the system had been first brought into operation, must surely be considered to have fully justified the Board of Trade in directing its further prosecution.

The Return to the House of Commons, dated April 13, 1864, a copy of which accompanied your letter, presents a comparison of the probable force of the wind as indicated by the signals in the year commencing April 1, 1863, and terminating March 31, 1864, and its actual state as reported in the three days following the exhibition of the signals; and Mr. Babington has since been so obliging as to communicate in manuscript a return having the same object in view for the year April 1, 1864, to March 31st, 1865.

From the first of these documents, the President and Council learn (in page 7) that the whole number of signals which were hoisted at different places, and of which reports were received, between April 1, 1863, and March 31, 1864, amounted to 2,288; of these the number which proved correct in respect to the *force* of the wind equalling or exceeding "a fresh gale" was 1,284; in 462 cases the stations were reached by the gale (or a still stronger wind blew) before the signal was hoisted; and in 726 within 48 hours after the signal was hoisted. Hence we may conclude that (omitting the 96 cases in which the gale occurred between 48 and 72 hours after the signal was hoisted) 1,188 signals, or more than half the whole number of 2,288, were justified by the state of the weather, either when the telegraphic message reached the station, or within 48 hours afterwards.

With respect to *direction* of wind in a gale indicated by signal, the "warnings" are reported to have been much less frequent. Of the 402 signals indicating direction as well as force, 271 agreed, and 131 did not agree, with the real direction of the wind; being a proportion of about two correct to one incorrect.

The manuscript with which Mr. Babington has favoured the Council since the receipt of your letter of May 26, 1865, contains a summary of the cautionary signals between April 1, 1864, and March 31, 1865, with notes stating their success or failure. From these it appears that signals were hoisted on 40 days in the course of the year, 29 of which appear to have been justified by the event, eight to have been failures, either in respect to force or direction, and three were late, the gale having already commenced. There are also five cases in which it is admitted that signals might have been made with advantage when none were sent.

It seems not unreasonable to attribute to increased experience the marked improvement of these results upon those of the preceding year, and to anticipate still further improvement.

The method adopted in preparing the storm-warnings has been very ably and lucidly explained by Mr. Babington in a paper dated May 11, 1865, presented by him to Mr. Farrer, by whom a copy has been sent to the President and Council. Possibly it may be viewed as the best arrangement that this branch of the duties of the office should continue as at present under the direction of Mr. Babington, by whom it has been virtually carried on for several months past.

On the subject of storms of a cyclonic character originating in the British Islands or in their vicinity, the interest of which was adverted to in the reply from the Royal Society to the Board of

Trade, March 27, 1863, reference has been made to Mr. Babington for such further information as may have been subsequently obtained. His reply to General Sabine is as follows :—

“ I can quite confirm your impression respecting Admiral FitzRoy’s belief in the evidence of the existence of small cyclonic storms in England itself, originating in or near our islands, and generated in the brushing against each other of the N.E. and S.W. currents, and in reply to your question I beg to say that I believe there is satisfactory evidence of the existence of such storms; but that these small storms are not very frequent; three or four in a year perhaps, and that they are, I think, more common in summer than in winter, although usually of less violence. The *direction* of their motion is certainly almost invariably towards some point between N.N.E. and E.S.E. With regard to the rapidity of their motion, I scarcely feel able to express an opinion; but at the ordinary rate of progression it takes such a storm about 48 hours to pass from Ireland to the Baltic. Not unfrequently, however, they appear to die out, as it were, before travelling so far.”

The existence of such storms in our islands is a fact in meteorological science of considerable interest, for which we are indebted to the researches instituted and carried on by Admiral FitzRoy’s department. Though not of very frequent occurrence, they constitute a class of phenomena well suited for telegraphic advertisement, especially on our eastern and north-eastern coasts. It might, perhaps, be practically desirable to indicate them by a special signal, distinguishing them from storms which have a more uniform direction. But however this may be, it seems to be desirable that the occurrence of such storms and their attendant phenomena, as obtainable at the time, should be carefully recorded, with a view to the records being ultimately put together in elucidation of a branch of the Meteorology of our islands which has hitherto been but imperfectly examined.

We proceed to notice the points on which we are informed that the Board of Trade especially desire the opinion of the Royal Society; and particularly the inquiry whether the objects specified in the Royal Society’s letter of the 22nd February 1855 are still viewed as of the same importance for the interests of science and navigation as they were then considered.

The most prominent amongst these objects was the collection and co-ordination of meteorological observations made at sea, including such as are required to form a correct knowledge of the currents of the ocean, their direction, extent, velocity, and the temperature of the surface-water relatively to the ordinary ocean temperature in the same latitude; together with the variations in all these respects which currents experience in different parts of the year and in different parts of their course. These, as well as the facts connected with the great barometric elevations and depressions which we know to exist in several oceanic localities, and their influence on circumstances affecting navigation, were noticed as inquiries well deserving the attention of the country possessing such extensive maritime facilities and interests as ours, and as forming a suitable contribution on our part to the general system of meteorological inquiry which had been adopted by the principal continental states in Europe and America.

We have learned from Mr. Babington that much was done by Admiral FitzRoy in the three or four years succeeding the establishment of his office (and before the subject of storm-warnings had engrossed the greater part of his consideration), in directing the attention of many of the commanders of our merchant ships to the collection of suitable data, and in improving their habits of observation and of record. The logs of such vessels form at present a large collection of documents existing in the office of the Board of Trade, partially examined, and their contents partially classified. The President and Council are glad to learn by your letter that the further prosecution of this great and important branch of Hydrography is about to be placed in the hands of the distinguished officer who now presides over the Hydrographic Department of the Admiralty, to whose duties it appears indeed most appropriately to belong, and to whose office, no doubt, the documents already collected will be transferred, and made available for public purposes.

There remain, therefore, to be noticed solely the considerations which relate to “Meteorology proper,” i.e., to the Land Meteorology of the British Islands. We find that the principal States of the European Continent have almost without exception formed establishments for the collection and publication periodically of the meteorology of their respective countries. The arrangements consist usually of a central office, at which instruments and instructions are provided for a number of stations, greater or less, according to the area which they represent; at which stations observations are made and transmitted to the central office, where the results of all are reduced, co-ordinated, and published. The small extent of the area comprised by the British Islands, in comparison with the territories of many of the European States, may require *fewer* stations; but in a matter now so generally attended to and provided for, it seems scarcely fitting that our country should be behind others. There is moreover, a peculiarity in the meteorological position of the British islands in respect to Europe generally as its north-western outpost, in consequence of which an especial duty appears to devolve upon us. M. Matteucci, in a very recent publication, has already made the important remark that extensive atmospheric disturbances which first invade Ireland and England, are those which, in winter more especially, extend to and pass the Alps (although somewhat retarded by them) and spread over Italy; and thus that, though receiving telegrams announcing storms taking place in the north of Europe, in Germany, on the western coasts of France, and of those of Spain, he finds that it has in fact been most especially in the case of announcements from England that storms so telegraphed have actually reached Italy, and been found to correspond with the accounts subsequently received from Italian Mediterranean ports.

A few stations, say six, distributed at nearly equal distances in a meridional direction from the south of England to the north of Scotland, furnished with self-recording instruments supplied from and duly verified at one of the stations regarded as a central station, and exhibiting a continuous record of the temperature, pressure, electric and hydrometric state of the atmosphere, and of the force and direction of the wind, might perhaps be sufficient to supply authoritative knowledge of

those peculiarities in the meteorology of our country which would be viewed as of the most importance to other countries, and would at the same time form authentic points of reference for the use of our own meteorologists. The scientific progress of meteorology from this time forward requires, indeed, such continuous records, first, for the sake of the knowledge which they alone can effectively supply, and next, for comparison with the results of independent observation not continuous. The actual photograms, or other mechanical representations, transmitted weekly by post to the central station would constitute a lithographed page for each day in the year, comprehending the phenomena at all the six stations, each separate curve admitting of exact measurement from its own base-line, the precise value of which might in every case be specified.

The President and Council suggest that the Observatory of the British Association at Kew might, with much propriety and public advantage, be adopted as the central meteorological station. It already possesses the principal self-recording instruments, and the greater part of them have been in constant use there for many months. There will be no difficulty in obtaining, through the intervention of the Committee of Management, similar instruments for the affiliated meteorological stations, and in arranging for their verification and comparison with the Kew standards, as well as in giving to those in whose hands they may be placed such instructions as may ensure uniformity of operation. The records from the other stations may be received at Kew by post weekly, or more frequently if required, and may be at once arranged for such form of publication as may be most approved. It seems expedient that, if practicable, the stations which should be selected to act in concert and co-operation with Kew should be in localities where some permanent establishment of a scientific character exists, and where a certain amount of supervision may be secured. In this view the President and Council would suggest, as eligible, the following chain of stations, commencing from the south, viz. :—

FALMOUTH.—Polytechnic Institution	-	-	-	-	Lat.	50	9
KEW.—Observatory of the British Association	-	-	-	-	„	51	28
STONYHURST.—The College, which has already a Magnetical and Meteorological Observatory	-	-	-	-	„	53	0
ARMAGH.—Observatory	-	-	-	-	„	54	21
GLASGOW.—University and Observatory	-	-	-	-	„	55	51
ABERDEEN.—University	-	-	-	-	„	57	9

To these six stations the President and Council would have been very glad to have added two others, one in the south-west and one in the north-west of Ireland. For the former of these possibly Valentia may present a fitting locality, when an establishment shall have been formed there as the connecting link by means of the Atlantic telegraph between Europe and America.

Having answered thus generally, it may perhaps be desirable to add specific replies on the several points enumerated in Questions 1 to 9. Preserving the order in which the inquiries are made, the replies are as follows :—

Question 1. The President and Council are of opinion that the objects specified in the Royal Society's letter of February 22, 1855, are as important for the interests of science and navigation as they were then considered.

Question 2. Much has without doubt been accomplished in the collection of facts bearing on Marine Meteorology, but as no systematic publication of the results has yet been made, the President and Council are unable to reply more specifically.

Question 3. The President and Council recommend that the Sea Observations should be placed in the hands of the Hydrographer with a view to the introduction of the results into the Admiralty Charts. They, however, at present have not sufficient information on the subject of the Land Observations which may exist in the office of the Board of Trade to justify them in offering any recommendation thereon.

Question 4. The President and Council consider it very desirable that further observations should be made, especially with reference to oceanic currents and great barometric depressions, and generally on all subjects comprehended under the denomination of "Ocean Statistics."

Questions 5 and 6. It appears from the late Admiral FitzRoy's reports, as well as from the explanations of Mr. Babington, that the storm-warnings have been based on inferences drawn from observations extending over a considerable area; and the President and Council recommend that they should be continued under the superintendence of that gentleman. Respecting the daily forecasts of weather, however, they decline expressing any opinion.

Question 7. The President and Council are of opinion that it would be desirable that an annual report, in a modified form, should be made to the Board of Trade of the results from the storm-warnings in the preceding year, and should be communicated to Parliament, and thereby become known to the public.

Question 8. A proper reply to this question would require information, and involve considerations which would occasion an inconvenient delay in the transmission of this letter.

Question 9. The suggestions of the President and Council in regard to the mode in which it appears to them that the important subject of "Meteorology Proper," or the "Land Meteorology" of the British Islands, might be dealt with economically, and at the same time effectively, have been fully stated in the body of this letter.

T. H. Farrer, Esq.,
&c. &c.
Board of Trade.

I have the honour to be, Sir,

Your obedient servant,

(Signed) EDWARD SABINE,
President, R.S.

SIR

Board of Trade, 24th October 1865.

I AM directed by the Board of Trade to acknowledge the receipt of your letter of the 15th June last, on the subject of the Meteorological Department of the Board of Trade, and to thank yourself and the Council of the Royal Society for the valuable information, advice, and suggestions which it contains.

The Council of the Royal Society discuss the system of Weather Telegraphy, and recommend that it shall be continued; they approve of the proposal to hand over to the Hydrographer to the Admiralty such part of the observations collected in the Meteorological Department of the Board of Trade as he can make use of in constructing charts for the use of seafaring men. And they discuss and recommend the adoption of a new system of making and recording meteorological observations on land.

As regards, however, one branch of the subject, viz., meteorological observations made at sea, which formed the original object of the Meteorological Department, and the chief subject of the letter from the Royal Society of the 22nd February 1855, the Board of Trade are not satisfied that they fully understand the present views of the Royal Society.

Your letter says, in answer to Question 1 contained in my letter of the 26th May last, asking, "Are the objects specified in the Royal Society's letter of the 22nd February 1855 still as important for the interests of science and navigation as they were then considered?" that "The President and Council are of opinion that the objects specified in the Royal Society's letter of February 22, 1855, are as important for the interests of science and navigation as they were then considered."

And it further says, in answer to Question 2, asking, "To what extent have any of these objects been answered by what has already been done by the Meteorological Department?" that "Much has without doubt been accomplished in the collection of facts bearing on Marine Meteorology, but as no systematic publication of the results has yet been made, the President and Council are unable to reply more specifically." It is probably for the reason contained in this answer that, whilst the other subjects above mentioned are fully discussed in your letter, the subject of these meteorological observations at sea is scarcely referred to. It is however essential that the Board of Trade should be rightly informed upon this point before they can determine what steps should be taken with regard to the Meteorological Department. What is the value of the observations at sea already collected? what steps should be taken to make them useful? and whether any, and, if any, what further observations of the same kind should be collected? are questions which must be answered before any final arrangement can be made with respect to the other points mentioned in your letter. With the view of clearing up these points, the Board of Trade are disposed to suggest the appointment of a small committee, consisting, say, of three or four persons, to examine the whole of the data already collected by the Meteorological Department; to inquire whether any and what steps should be taken for digesting and publishing them; and also to report whether it is desirable that observations of a similar kind shall still continue to be collected. Such a Committee would also, in all probability, be able to make valuable recommendations as to the mode in which the business of the Department (if continued) shall be conducted, and as to the form in which the daily Weather Reports (by whomsoever they may be made) should be published.

If the Royal Society concur in this suggestion, the Board of Trade would ask them to appoint, as a member of the Committee, some gentleman whose acquirements would enable him to give valuable advice on the scientific part of the subject; and they would also ask the Admiralty to appoint another member. The Board of Trade will feel much obliged if you will favour them with the opinion of the President and Council on this suggestion.

With reference to the subject of meteorological observations on land, the Board of Trade do not clearly understand whether the Royal Society think that they should be substituted for, or be in addition to, the meteorological observations at sea, which were originally suggested by the Royal Society. They are disposed to agree with the Royal Society in thinking that any observations of a scientific nature would be better conducted under the authority and supervision of a scientific body, such as the Royal Society or the British Association, than of a Government Department. But they do not see how they could advise the Government to sanction any plan which would involve the establishment of two separate offices for meteorological purposes, one under the Board of Trade at Whitehall, and the other at Kew. It seems to them obvious that any assistance to be given by Parliament for meteorological purposes will be more advantageously employed if concentrated at one place, and in one set of hands, than it can be if distributed among different establishments.

I have the honour to be, Sir,

Your obedient servant,

(Signed) T. H. FARRER.

The President of the Royal Society.

SIR,

Burlington House, November 2, 1865.

I HAVE submitted your letter of the 24th of October to the Council of the Royal Society, and have now the honour to reply to it.

The President and Council fully concur with the Board of Trade regarding the importance of inquiries being made into the value of the observations obtained at sea under the direction and guidance of the Meteorological Department of the Board of Trade, and into the steps which should be taken to utilize the results, as well as the further question, Whether any, and, if any, what future observations of the same, or of a similar kind, bearing on Ocean Statistics should be collected? They will be quite ready to assist in this inquiry in the manner proposed, viz., by nominating one of their fellows conversant with such subjects as a member of the proposed Committee.

In reference to the last paragraph of your letter of the 24th October, they are of opinion that systematic meteorological observations at a few selected land stations in the British islands are desirable, in addition to the meteorological observations at sea, in order to complete a suitable contribution from this country to the meteorological observations now in progress in the principal states of Europe and America, under the authority of their respective Governments.

If, in the communication from the Royal Society to the Board of Trade, of February 22, 1855, which preceded the establishment of Admiral FitzRoy's office, the advantages to be derived from a continuous and well-directed system of maritime observations were more particularly pressed, it was because at that time neither the instruments nor the modes of observation suitable for a well-organized and efficient system of continuous land observation, were prepared. This was well stated by Lieut. Maury, in a letter addressed to the United States Government, dated November 6, 1852, subsequently transmitted by that Government to the Earl of Clarendon, and printed in the "Papers presented to the House of Lords in February 1853." This difficulty no longer exists, having been entirely obviated by the self-recording system of observation, for which the necessary instruments have been devised and brought into use at the Kew Observatory.

The President and Council are not aware of any inconvenience likely to arise from entrusting the scientific supervision of such a system as they have recommended to a body such as the Kew Committee, acting under the authorization and control, in regard to expenditure, of a public department. Precedents for such a course are not wanting.

I have the honour to be, Sir,

Your obedient servant,

(Signed) EDWARD SABINE,
President of the Royal Society.

T. H. Farrer, Esq.

SIR,

Board of Trade, 20th November 1865.

WITH reference to your letter of the 2nd November, stating the willingness of the President and Council of the Royal Society to appoint one of their fellows to represent the Society upon a Committee to examine and report on questions connected with the Meteorological Department of the Board of Trade, I am to inform you that Staff-Commander Evans has been nominated by the Admiralty, and Mr. Farrer by this Board, and I am at the same time to request you to be good enough to forward the name of the gentleman selected by the President and Council of the Royal Society.

The following are the points which the Board of Trade propose to refer to the Committee if the President and Council see no objection:—

1. What are the data, especially as regards meteorological observations made at sea, already collected by and now existing in the Meteorological Department of the Board of Trade?
2. Whether any and what steps should be taken for arranging, tabulating, publishing, and otherwise making use of such data.
3. Whether it is desirable to continue meteorological observations at sea, and, if so, to what extent and in what manner.
4. Assuming that the system of Weather Telegraphy is to be continued, can the mode of carrying it on and of publishing the results be improved?
5. What staff will be necessary for the above purposes?

I have the honour to be, Sir,

Your obedient servant,

The President of the Royal Society.

(Signed) J. EMERSON TENNENT.

SIR,

The Royal Society, Burlington House,
November 22, 1865.

I BEG to acknowledge the receipt of your letter of the 20th instant, and to inform you that the President and Council of the Royal Society have selected Mr. Francis Galton, F.R.S., and general secretary of the British Association, to represent the Royal Society upon a Committee to examine and report on questions connected with the Meteorological Department of the Board of Trade.

I have the honour to be,

Your obedient servant,

Sir J. Emerson Tennent.

(Signed) EDWARD SABINE,
President Royal Society.

SIR,

Board of Trade, 28th October 1865.

I AM directed by the Board of Trade to transmit to you the accompanying copy of a correspondence which they have had with the President of the Royal Society on the subject of the Meteorological Department of this Board.

I am specially to direct the attention of the Lords Commissioners of the Admiralty to their last letter, dated the 24th instant.

This letter contains a suggestion that a Committee be appointed to examine into the whole data collected at the Meteorological Department, and to report whether it is desirable to continue the collection of similar observations; and if so, what steps should be taken for their digestion and publication.

You will observe that in consequence of the relation between the Hydrographer and the Admiralty and the Meteorological Department of the Board of Trade, this Board suggest that one of the members of the Committee should be appointed by the Admiralty, and I am to request that they may be informed whether the Lords Commissioners approve of the suggestion, and whether they will, in the event of the Royal Society agreeing to the suggestion, be willing to name an officer to act upon the Committee.

The Secretary of the Admiralty.

I have the honour to be, Sir,
Your obedient servant,
(Signed) T. H. FARRER.

SIR,

Admiralty, 4th November 1865.

WITH reference to your letter of the 28th ultimo, I am commanded by my Lords Commissioners of the Admiralty to acquaint you that in the event of a Committee being appointed to examine and report on questions connected with the Meteorological Department, their Lordships will be prepared to nominate Staff-Commander Evans, the chief assistant in the Hydrographical Department, to sit on the Committee, and I am to request you will so inform the Lords of the Committee of Privy Council for Trade.

The Secretary, Board of Trade.

I am, Sir,
Your very humble servant,
(Signed) W. G. ROMAINE.

APPENDIX No. 2 (page 5).

LETTER of ROYAL SOCIETY of February 22, 1855, and Extract from subsequent Letter, describing Functions of METEOROLOGICAL DEPARTMENT.

Royal Society, Somerset House,
February 22, 1855.

SIR,

IN the month of June last, the Lords of the Committee of the Privy Council for Trade caused a letter to be addressed to the President and Council of the Royal Society, acquainting them that their Lordships were about to submit to Parliament an estimate for an office for the discussion of the observations on Meteorology to be made at sea in all parts of the globe, in conformity with the recommendation of a conference held at Brussels in 1853; and that they were about to construct a set of forms for the use of that office, in which they proposed to publish from time to time and to circulate such statistical results, obtained by means of the observations referred to, as might be considered most desirable by men learned in the science of Meteorology, in addition to such other information as might be required for the purposes of navigation.

Before doing so, however, their Lordships were desirous of having the opinion of the Royal Society, as to what were the great desiderata in meteorological science; and as to the forms which may be best calculated to exhibit the great atmospheric laws which it may be most desirable to develop.

Their Lordships further state, that as it may possibly happen that observations on land upon an extended scale may hereafter be made and discussed in the same office, it is desirable that the reply of the Royal Society should keep in view, and provide for, such a contingency.

Deeply impressed with a sense of the magnitude and importance of the work which has been thus undertaken by Her Majesty's Government, and confided to the Board of Trade, and fully appreciating the honour of being consulted, and the responsibility of the reply which they are called upon to make; considering also that by including the contingency of *land* observations, the inquiry is, in fact, co-extensive with the requirements of Meteorology over all accessible parts of the earth's surface,—the President and Council of the Royal Society deemed it advisable, before making their reply, to obtain the opinion of those amongst their foreign members who are known as distinguished cultivators of meteorological science, as well as of others in foreign countries, who either hold offices connected with the advancement of Meteorology, or have otherwise devoted themselves to this branch of science.

A circular was accordingly addressed to several gentlemen whose names were transmitted to the Board of Trade in June last, containing a copy of the communication from the Board of Trade, and a request to be favoured with any suggestions which might aid Her Majesty's Government in an undertaking which was obviously one of general concernment.

Replies in some degree of detail have been received from five of these gentlemen,* copies of which are herewith transmitted.

The President and Council are glad to avail themselves of this opportunity of expressing their acknowledgments to these gentlemen, and more particularly to Professor Dove, Director of the Meteorological establishments and institutions in Prussia, whose zeal for the advancement of Meteorology induced him to repair personally to England, and to join himself to the Committee by whom the present reply has been prepared. Those who are most familiar with the labours and writings of this eminent meteorologist will best be able to appreciate the value of his co-operation.

* Dr. Erman of Berlin; Dr. Heis of Münster; Prof. Kreil of Vienna; Lieut. Maury of Washington; and M. Quetelet of Brussels.

The President and Council have considered it as the most convenient course to divide their reply under the different heads into which the subject naturally branches. But before they proceed to treat of these, they wish to remark generally, that one of the chief impediments to the advancement of meteorology consists in the very slow progress which is made in the transmission from one country to another of the observations and discussions on which, under the fostering aid of different governments, so much labour is bestowed in Europe and America; and they would therefore recommend that such steps as may appear desirable should be taken by Her Majesty's Government to promote and facilitate the mutual interchange of meteorological publications emanating from the governments of different countries.

Barometer.

It is known that considerable differences, apparently of a permanent character, are found to exist in the mean barometric pressure in different places: and that the periodical variations in the pressure in different months and seasons at the same place are very different in different parts of the globe, both as respects period and amount; insomuch that in extreme cases, the variations have even opposite features in regard to period, in places situated in the same hemisphere and at equal distances from the equator.

For the purpose of extending our knowledge of the facts of these departures from the state of equilibrium, and of more fully investigating the causes thereof, it is desirable to obtain, by means of barometric observations strictly comparable with each other, and extending over all parts of the globe accessible by land or sea, *tables*, showing the mean barometric pressure *in the year, in each month of the year, and in the four meteorological seasons*,—on land, at all stations of observation,—and at sea, corresponding to the middle points of spaces bounded by geographical latitudes and longitudes, not far distant from each other.

The manner of forming such tables from the marine observations which are now proposed to be made, by collecting together observations of the same month in separate ledgers, each of which should correspond to a *geographical space* comprised between specified meridians and parallels, and to a *particular month*, is too obvious to require to be further dwelt upon. The distances apart of the meridians and parallels will require to be varied in different parts of the globe, so that the magnitudes of the spaces which they enclose, and for each of which a table will be formed, may be more circumscribed, when the rapidity of the variation of the particular phenomena to be elucidated is greatest in regard to geographical space. Their magnitude will also necessarily vary with the number of observations which it may be possible to collect in each space, inasmuch as it is well known that there are extensive portions of the ocean which are scarcely ever traversed by ships, whilst other portions may be viewed as the highways of a constant traffic.

The strict comparability of observations made in different ships may perhaps be best assured, by limiting the examination of the instruments to comparisons which it is proposed to make at the Kew Observatory, before and after their employment in particular ships. From the nature of their construction, the barometers with which Her Majesty's navy and the mercantile marine are to be supplied are not very liable to derangement, except from such accidents as would destroy them altogether. Under present arrangements they will all be carefully compared at Kew before they are sent to the Admiralty or to the Board of Trade; and similar arrangements may easily be made by which they may be returned to Kew for re-examination at the expiration of each tour of service. The comparison of barometers, when embarked and in use, with standards, or supposed standards, at ports which the vessels may visit, entails many inconveniences, and is in many respects a far less satisfactory method. The limitation here recommended is not, however, to be understood as applicable in the case of other establishments than Kew, where a special provision may be made for an equally careful and correct examination.

At land stations, in addition to proper measures to assure the correctness of the barometer and consequent comparability of the observations, care should be taken to ascertain by the best possible means (independently of the barometer itself) the height of the station above the level of the sea at some stated locality. For this purpose the extension of levels for the construction of railroads will often afford facilities.

It may be desirable to indicate some of the localities where the data, which tables such as those which have been spoken of would exhibit, are required for the solution of problems of immediate interest.

1^o. It is known that over the Atlantic Ocean a low mean annual pressure exists near the equator, and a high pressure at the north and south borders of the torrid zone (23° to 30° north and south latitudes); and it is probable that from similar causes similar phenomena exist over the corresponding latitudes in the Pacific Ocean; the few observations which we possess are in accord with this supposition; but the extent of space covered by the Pacific is large and the observations are few; they may be expected to be greatly increased by the means now contemplated. But it is particularly over the Indian Ocean, both at the equator and at the borders of the torrid zone, that the phenomena of the barometric pressure not only annual, but also monthly, require elucidation by observations. The trade winds, which would prevail generally round the globe if it were wholly covered by a surface of water, are interrupted by the large continental spaces in Asia and Australia, and give place to the phenomena of monsoons, which are the indirect results of the heating action of the sun's rays on those continental spaces. These are the causes of that displacement of the trade winds, and substitution of a current flowing in another direction, which occasion the atmospheric phenomena over the Indian Ocean, and on the north and south sides of that ocean, to be different from those in corresponding localities over and on either side of the equator in the Atlantic Ocean, and (probably generally also) in the Pacific Ocean.

It is important alike to navigation and to general science to know the limits where the phenomena

of the trade winds give place to those of the monsoons; and whether any and what variations take place in those limits in different parts of the year. *The barometric variations are intimately connected with the causes of these variations, and require to be known for their more perfect elucidation.*

The importance, indeed, of a full and complete knowledge of the variations which take place in the limits of the trade winds, generally in both hemispheres, at different seasons of the year, has long been recognised. On this account, although the present section is headed "Barometer," it may be well to remark here, that it is desirable that the forms supplied to ships should contain headings, calling forth a special record of the latitude and longitude where the trade wind is first met with, and where it is first found to fail.

2°. The great extent of continental space in Northern Asia causes, by reason of the great heat of the summer and the ascending current produced thereby, a remarkable diminution of atmospheric pressure in the summer months, extending in the north to the Polar Sea, and on the European side as far as Moscow. Towards the east it is known to include the coast of China and Japan, but the extent of this great diminution of summer pressure beyond the coasts thus named is not known. A determination of the monthly variation of the pressure over the adjacent parts of the Pacific Ocean is therefore a desideratum; and for the same object it is desirable to have a more accurate knowledge than we now possess of the prevailing direction of the wind in different seasons in the vicinity of the coasts of China and Japan.

3°. With reference to regions or districts of increased or diminished *mean annual* pressure, it is known that in certain districts in the temperate and polar zones, such as in the vicinity of Cape Horn extending into the antarctic polar ocean, and in the vicinity of Iceland, the mean annual barometric pressure is *considerably* less than the average pressure on the surface of the globe generally; and that anomalous differences, also of considerable amount, exist in the mean pressure in different part of the arctic ocean. These all require special attention, with a view to obtain a more perfect knowledge of the facts, in regard to their amount, geographical extension, and variation with the change of seasons, as well as to the elucidation of their causes.

Dry Air and Aqueous Vapour.

The apparently anomalous variations which have been noticed to exist in the mean annual barometric pressure, and in its distribution in the different seasons and months of the year, are also found to exist in each of the two constituent pressures which conjointly constitute the barometric pressure. In order to study the problems connected with these departures from a state of equilibrium under their most simple forms,—and generally for the true understanding of almost all the great laws of atmospheric change,—it is necessary to have a separate knowledge of the two constituents (*viz.*, the pressures of the dry air and of the aqueous vapour) which we are accustomed to measure together by the barometer. This separate knowledge is obtained by means of the hygrometer, which determines the elasticity of the vapour, and leads to the determination of that of the dry air, by enabling us to deduct the elasticity of the vapour from that of the whole barometric pressure. It is therefore extremely desirable that tables, similar to those recommended under the preceding head of the barometer, should be formed at every land station, and over the ocean at the centres of geographical spaces bounded by certain values of latitude and longitude, for the *annual, monthly, and season* pressures,—1. Of the aqueous vapour; and 2. Of the dry air; each considered separately. Each of the said geographical spaces will require its appropriate ledger for each of the twelve months.

It may be desirable to notice one or two of the problems connected with extensive and important atmospherical laws, which may be materially assisted by such tables.

1°. By the operation of causes which are too well known to require explanation here, the dry air should always have a minimum pressure in the hottest months of the year. But we know that there are places where the contrary prevails, namely, that the pressure of the dry air is greater in summer than in winter. We also know that when comparison is made between places in the same latitude, and having the same, or very nearly the same, differences of temperature in summer and in winter, the differences between the summer and winter pressures of the dry air are found to be subject to many remarkable anomalies. The variations in the pressure of the dry air do not therefore, as might be at first imagined, depend altogether on the differences between the summer and winter temperatures at the places where the variations themselves occur. The increased pressure in the hottest months appears rather to point to the existence of an overflow of air in the higher regions of the atmosphere from *lateral sources*; the statical pressure at the base of the column being increased by the augmentation of the superincumbent mass of air arising from an influx in the upper portion. Such lateral sources may well be supposed to be due to *excessive ascensional currents* caused by *excessive summer heats* in certain places of the globe (as, for example, in Central Asia). Now the lateral overflow from such sources, traversing in the shape of currents the higher regions of the atmosphere, and encountering the well-known general current flowing from the equator towards the pole, has been recently assigned with considerable probability (derived from its correspondence with many otherwise anomalous phenomena already known, and which all receive an explanation from such supposition) to be the original source or primary cause of the *rotating storms* or *cyclones*, so well known in the West Indies and in China under the names of hurricanes and typhoons. A single illustration may be desirable. Let it be supposed that such an excessive ascensional current exists over the greatly heated parts of Asia and Africa in the northern tropical zone,—giving rise, in the continuation of the same zone over the Atlantic Ocean, to a lateral current in the upper regions; this would then be a current prevailing in those regions from east to west; and it would encounter over the Atlantic Ocean the well-known upper current proceeding from the equator towards the pole, which is a current from the south-west. An easterly current impinging on a south-west current may give rise, by well-known laws, to a rotatory motion in the atmosphere, of which the direction may be the same as

that which characterizes the cyclones of the northern hemisphere. To test the accuracy of this explanation, we desire to be acquainted with the variations which the *mean pressure of the dry air undergoes in the different seasons* in the part of the globe where, according to this explanation considerable variations having particular characters ought to be found.

2°. We have named one of the explanations which have been recently offered of the primary cause of the northern cyclones. Another mode of explanation has been proposed, by assuming the condensation of large quantities of vapour, and the consequent influx of air to supply the place. In such case the phenomena are to be tested in considerable measure by the variations which the *other constituent* of the barometric pressure, namely, the *aqueous vapour* undergoes.

3°. The surface of sea in the southern hemisphere *much* exceeds that in the northern hemisphere. It is therefore probable that at the season when the sun is over the southern hemisphere, evaporation over the whole surface of the globe is more considerable than in the opposite season, when the sun is over the northern hemisphere. Supposing the pressure of the dry air to be a constant, the difference of evaporation in the two seasons may thus produce for the whole globe an *annual barometric variation*, the aggregate barometric pressure over the *whole* surface being highest during the northern winter. The separation of the barometric pressure into its two constituent pressures would give direct and conclusive evidence of the cause to which such a barometric variation should be ascribed. It would also follow that evaporation being greatest in the south, and condensation greatest in the north, the water which proceeds from south to north in a state of vapour would have to return to the south in a liquid state, and might possibly exert some discernable influence on the currents of the ocean. The tests by which the truth of the suppositions thus advanced may be determined are the variations of the meteorological elements in different seasons and months, determined by methods and instruments strictly comparable with each other, and arranged in such tables as have been suggested. A still more direct test would indeed be furnished by the fact (if it could be ascertained), that the quantity of rain which falls in the northern is greater than that which falls in the southern hemisphere, and by examining its distribution into the different months and season of its occurrence. Data for such conclusions are as yet very insufficient; they should always, however, form a part of the record at all land stations where registers are kept.

In order that all observations of the elasticity of the aqueous vapour may be strictly comparable, it is desirable that all should be computed by the same tables; those founded upon the experiments of MM. Regnault and Magnus may be most suitably recommended for this purpose, not only on their general merits, but also as being likely to be most generally adopted by observers in other countries.

Temperature of the Air.

Tables of the mean temperature of the air in the year, and in the different months and seasons of the year, at above 1,000 stations on the globe, have recently been computed by Professor Dove, and published under the auspices of the Royal Academy of Sciences at Berlin. This work, which is a true model of the method in which a great body of meteorological facts, collected by different observers and at different times, should be brought together and co-ordinated, has conducted, as is well known, to conclusions of very considerable importance on their bearing on climatology, and on the general laws of the distribution of heat on the surface of the globe. These tables have, however, been formed exclusively from observations made *on land*. For the completion of this great work of physical geography, there is yet wanting a similar investigation for the *oceanic* portion: and this we may hopefully anticipate as likely to be now accomplished by means of the marine observations about to be undertaken. In the case of the temperature of the air, as in that of the atmospheric pressure previously adverted to, the centres of geographical spaces bounded by certain latitudes and longitudes will form points of concentration for observations which may be made within those spaces, not only by the same but also by different ships; provided that the system be steadily maintained of employing only instruments which shall have been examined, and their intercomparability ascertained, by a competent and responsible authority; and provided that no observations be used but those in which careful attention shall have been given to the precautions which it will be necessary to adopt, for the purpose of obtaining the correct knowledge of the temperature of the external air, amidst the many disturbing influences from heat and moisture so difficult to escape on board ship. In this respect additional precautions must be used, if *night observations* are to be required, since the ordinary difficulties are necessarily much enhanced by the employment of artificial light. Amongst the instructions which will be required perhaps there will be none which will need to be more carefully drawn than those for obtaining the correct temperature of the external air under the continually varying circumstances that present themselves on board ship.

In regard to *land stations* Professor Dove's tables have shown that data are still pressingly required from the British North American possessions intermediate between the stations of the Arctic Expeditions and those of the United States; and that the deficiency extends across the whole North American Continent in those latitudes from the Atlantic to the Pacific. Professor Dove has also indicated as desiderata observations at the British Military stations in the Mediterranean (Gibraltar, Malta, and Corfu), and around the Coasts of Australia and New Zealand: also that *hourly* observations, continued for at least one year, are particularly required at some one station in the West Indies, to supply the diurnal corrections for existing observations.

Whilst the study of the distribution of heat at the surface of the globe has thus been making progress, in respect to the *mean annual temperature* in different places, and to its *periodical variations* in different parts of the year at the same place, the attention of physical geographers has recently been directed (and with great promise of important results to the material interests of men as well as to general science) to the causes of those fluctuations in the temperature, or departures

from its mean or normal state at the same place and at the same period of the year, which have received the name of "non-periodic variations." It is known that these frequently affect extensive portions of the globe at the same time; and are generally, if not always, accompanied by a fluctuation of an opposite character, prevailing at the same time in some adjoining but distant region; so that by the comparison of synchronous observations a progression is traceable, from a locality of maximum increased heat in one region, to one of maximum diminished heat in another region. For the elucidation of the non-periodic variations even *monthly* means are insufficient; and the necessity has been felt of computing the mean temperatures for periods of much shorter duration. The Meteorological Institutions of those of the European States which have taken the foremost part in the prosecution of meteorology, have in consequence adopted *five-day means*, as the most suitable intermediate gradation between daily and monthly means; and as an evidence of the conviction which is entertained of the value of the conclusions to which this investigation is likely to lead, it has been considered worth while to undertake the prodigious labour of calculating the five-day means of the most reliable existing observations during a century past. This work is already far advanced; and it cannot be too strongly recommended, that at all fixed stations, where observations shall hereafter be made with sufficient care to be worth recording, five-days means may invariably be added to the daily, monthly, and annual means into which the observations are usually collected. The five-day means should always commence with January 1, for the purpose of preserving the uniformity at different stations, which is essential for comparison: in leap years, the period which includes the 29th of February will be of six days.

In treating climatology as a *science*, it is desirable that some correct and convenient mode should be adopted for computing and expressing the *comparative variability* to which the temperature in different parts of the globe, and in different parts of the year in the same place, is subject from non-periodic causes. The *probable variability*, computed on the same principle as the *probable error* of each of a number of independent observations, has recently been suggested as furnishing an index "of the probable daily non-periodic variation" at the different seasons of the year; and its use in this respect has been exemplified by calculations of the "index" from the five-day means of twelve years of observations at Toronto, in Canada (Phil. Trans. 1853, Art. V.) An index of this description is of course of absolute and general application; supplying the means of comparing the probable variability of the temperature in different seasons at *different places* (where the same method of computation is adopted) as well as at the *same place*. It is desirable that this (or some preferable method, if such can be devised for obtaining the same object) should be adopted by those who may desire to make their observations practically useful for sanitary or agricultural purposes, or for any of the great variety of objects for which climatic peculiarities are required to be known. Having these three data, viz., the mean annual temperature,—its periodical changes in respect to days, months, and seasons,—and the measure of its liability to non-periodic (or what would commonly be called irregular) variations, we may consider that we possess as complete a representation of the climate of any particular place (so far as temperature is concerned) as the present state of our knowledge permits.

It is obvious that much of what has been said under this Article is more applicable to land than to sea observations; but the letter of the Board of Trade, to which this is a reply, requests that both should be contemplated.

Temperature of the Sea, and Investigations regarding Currents.

It is unnecessary to dwell on the practical importance to *navigation* of a correct knowledge of the currents of the ocean; their direction, extent, velocity, and the temperature of the surface water relatively to the ordinary ocean temperature in the same latitude; together with the variations in all these respects which currents experience in different parts of the year, and in different parts of their course. As the information on these points, which may be expected to follow from the measures adopted by the Board of Trade, must necessarily depend in great degree on the *intelligence*, as well as the *interest* taken in them by the observers, it is desirable that the instructions to be supplied with the meteorological instruments should contain a brief summary of what is already known in regard to the principal oceanic currents; accompanied by charts on which their supposed limits in different seasons, and the variations in those limits which may have been observed in particular years, may be indicated, with notices of the particularities of the temperature of the surface-water by which the presence of the current may be recognised. Forms will also be required for use in such localities, in which the surface temperatures may be recorded at hourly or half-hourly intervals, with the corresponding geographical positions of the ship, as they may be best inferred from observation and reckoning. For such localities also it will be necessary that the tables, into which the observations of different ships at different seasons are collected, should have their bounding lines of latitude and longitude brought nearer together than may be required for the ocean at large.

In looking forward to the results which are likely to be obtained by the contemplated marine observations, it is reasonable that those which may bear practically on the interests of navigation should occupy the first place; but, on the other hand, it would not be easy to over-estimate the advantages to physical geography, of general tables of the surface temperature of the ocean in the different months of the year, exhibiting, as they would do, its normal and its abnormal states, the mean temperature of the different parallels, and the deviations therefrom, whether permanent, periodical, or occasional. The knowledge which such tables would convey is essentially required for the study of climatology as a *science*.

The degree in which climatic variations extending over large portions of the earth's surface may be influenced by the variable phenomena of oceanic currents in different years, may perhaps be illustrated by circumstances of known occurrence in the vicinity of our own coasts. The admirable researches

of Major Rennell have shown that in ordinary years the warm water of the great current known by the name of the Gulf stream is not found to the east of the meridian of the Azores; the sea being of ordinary ocean temperature for its latitude at all seasons, and in every direction, in the great space comprised between the Azores and the coasts of Europe and North Africa; but Major Rennell has also shown that on two occasions, viz., in 1776 and in 1821–1822, the warm water by which the Gulf stream is characterised throughout its whole course (*being several degrees* above the ordinary ocean temperature in the same latitude), was found to extend across this great expanse of ocean, and in 1776 (in particular) was traced (by Dr. Franklin) quite home to the coast of Europe. The presence of a body of unusually heated water, extending for several hundred miles both in latitude and in longitude, and continuing for several weeks, at a season of the year when the prevailing winds blow from that quarter on the coasts of England and France, can scarcely be imagined to be without a considerable influence on the relations of temperature and moisture in those countries. In accordance with this supposition, we find in the Meteorological Journals of the more recent period (which are more easily accessible), that the state of the weather in November and December 1821 and January 1822 was so unusual in the southern parts of Great Britain and in France as to have excited general observation; we find it characterised as “most extraordinarily hot, damp, stormy, and oppressive,” that “the gales from the W. and S.W. were almost without intermission,” “the fall of rain was excessive,” and “the barometer lower than it had ever been known for 35 years before.”

There can be little doubt that Major Rennell was right in ascribing the unusual extension of the Gulf-stream in particular years to its greater initial velocity, occasioned by a more than ordinary difference in the levels of the Gulf of Mexico and of the Atlantic in the preceding summer. An unusual height of the Gulf of Mexico at the head of the stream, or an unusual velocity of the stream at its outset in the Strait of Florida, are facts which may admit of being recognised by properly directed attention; and as these must precede, by many weeks, the arrival of the warm water of the stream at above 3,000 miles distant from its outset, and the climatic effects thence resulting, it might be possible to anticipate the occurrence of such unusual seasons upon our coasts.

Much, indeed, may undoubtedly be done towards the increase of our partial acquaintance with the phenomena of the Gulf-stream, and of its counter currents, by the collection and co-ordination of observations made by casual passages of ships in different years and different seasons across different parts of its course; but for that full and complete knowledge of all its particulars, which should meet the maritime and scientific requirements of the period in which we live, we must await the disposition of Government to accede to the recommendation, so frequently made to them by the most eminent hydrographical authorities, of a specific survey of the stream by vessels employed for that special service. What has been recently accomplished by the Government of the United States in this respect shows both the importance of the inquiry and the great extent of the research, and lends great weight to the proposition which has been made to Her Majesty's Government on the part of the United States, for a joint survey of the whole stream by vessels of the two countries. The establishment of an office under the Board of Trade specially charged with the reduction and co-ordination of such data may materially facilitate such an undertaking.

Storms or Gales.

It is much to be desired, both for the purposes of navigation and for those of general science, that the captains of Her Majesty's ships and masters of merchant vessels should be correctly and thoroughly instructed in the methods of distinguishing in *all cases* between the rotatory storms or gales, which are properly called *Cyclones*, and gales of a more ordinary character, but which are frequently accompanied by a veering of the wind, which under certain circumstances might easily be confounded with the phenomena of Cyclones, though due to a very different cause. It is recommended, therefore, that the instructions proposed to be given to ships supplied with meteorological instruments should contain clear and simple directions for distinguishing in *all cases*, and under *all circumstances*, between these two kinds of storms; and that the forms to be issued for recording the meteorological phenomena during great atmospheric disturbances should comprehend a notice of all the particulars which are required for forming a correct judgment in this respect.

Thunder-storms.

It is known that in the high latitudes of the northern and southern hemispheres thunder-storms are almost wholly unknown; and it is believed that they are of very rare occurrence over the ocean in the middle latitudes when distant from continents. By a suitable classification and arrangement of the documents which will be henceforward received by the Board of Trade, statistical tables may in process of time be formed, showing the comparative frequency of these phenomena in different parts of the ocean and in different months of the year.

It is known that there are localities on the globe where, during certain months of the year, thunder-storms may be considered as a periodical phenomenon of daily occurrence. In the Port Royal Mountains in Jamaica, for example, thunder-storms are said to take place *daily* about the hour of noon from the middle of November to the middle of April. It is much to be desired that a full and precise account of such thunder-storms, and of the circumstances in which they appear to originate, should be obtained.

In recording the phenomena of thunder and lightning, it is desirable to state the duration of the interval between the flashes of lightning and the thunder which follows. This may be done by means of a seconds-hand watch, by which the time of the apparition of the flash, and of the commencement (and of the conclusion also) of the thunder may be noted. The interval between the flash and the commencement of the thunder has been known to vary in different cases, from

less than a single second to between 40 and 50 seconds, and even on very rare occasions to exceed 50 seconds. The two forms of ordinary lightning, viz., zigzag (or forked) lightning and sheet lightning, should always be distinguished apart; and particular attention should be given both to the observation and to the record, in the rare cases when zigzag lightning either bifurcates, or returns upwards. A special notice should not fail to be made when thunder and lightning, or either separately, occur in a perfectly cloudless sky. When globular lightning (balls of fire) are seen, a particular record should be made of all the attendant circumstances. These phenomena are known to be of the nature of lightning, from the injury they have occasioned in ships and buildings that have been struck by them; but they differ from ordinary lightning not only by their globular shape, but by the length of time they continue visible, and by their slow motion. They are said to occur sometimes without the usual accompaniments of a storm, and even with a perfectly serene sky. Conductors are now so universally employed in ships that it may seem almost superfluous to remark that should a ship be struck by lightning, the most circumstantial account will be desirable of the course which the lightning took, and of the injuries it occasioned; or to remind the seaman that it is always prudent, after such an accident has befallen a ship, to distrust her compasses until it has been ascertained that their direction has not been altered. Accidents occurring *on land* from lightning will, of course, receive the fullest attention from meteorologists who may be within convenient distance of the spot.

Auroras and Falling Stars.

Auroras are of such rare occurrence in seas frequented by ships engaged in commerce, that it may seem superfluous to give any particular directions for their observation *at sea*; and land observatories are already abundantly furnished with such. It is, of course, desirable that the meteorological reports received from ships should always contain a notice of the time and place where Auroras may be seen, and of any remarkable features that may attract attention.

The letter from Professor Heis, which is one of the foreign communications annexed, indicates the principal points to be attended to in the instructions which it may be desirable to draw up for the observation of "Falling Stars." For directions concerning Halos and Parhelia, a paper by Monsieur Bravais in the "*Annuaire Météorologique de la France*" for 1851, contains suggestions which will be found of much value.

Charts of the Magnetic Variation.

Although the variation of the compass does not belong in strictness to the domain of meteorology, it has been included, with great propriety, amongst the subjects treated of by the Brussels Conference, and should not therefore be omitted here. It is scarcely necessary to remark, that whatever may have been the practice in times past, when the phenomena of the earth's magnetism were less understood than at present, it should in future be regarded as indispensable, that variation-charts should always be constructed for a *particular epoch* and that *all parts* of the chart should show *the variation corresponding to the epoch for which it is constructed*. Such charts should also have, either engraved on the face or attached in some convenient manner, a table, showing the approximate annual rate of the secular change of the variation in the different latitudes and longitudes comprised: so that by means of this table, the variation taken from the chart for any particular latitude and longitude may be corrected to the year for which it is required, if that should happen to be different from the epoch for which the chart is constructed.

A valuable service would be rendered to this very important branch of hydrography if, under the authority of the new department of the Board of Trade, variation-charts for the North and South Atlantic Oceans, for the North and South Pacific Oceans, for the Indian Ocean, and for any other localities in which the requirements of navigation might call for them, were published at *stated intervals*, corrected for the secular change that had taken place since the preceding publication. Materials would be furnished for this purpose by the observations which are now intended to be made, supposing them to be collected and suitably arranged with proper references to date and to geographical position, and to the original reports in which the results and the data on which they were founded were communicated. By means of these observations the tables of approximate correction for secular change might also be altered from time to time as occasion should require, since the rate of secular change itself is not constant.

All observed variations, communicated or employed as data upon which variation-charts may be either constructed or corrected, should be accompanied by other observational data (the nature of which ought now to be well understood) for correcting the observed variation for the error of the compass occasioned by the ship's iron. It is also strongly recommended that no observations be received as data for the formation or correction of variation-charts, but such as are accompanied by a detailed statement of the principal elements both of observation and of calculation. Proper forms should be supplied for this purpose; or, what is still better, books of blank forms may be supplied, in which the observations themselves may be entered, and the calculation performed by which the results are obtained. Such books of blank forms would be found extremely useful both for the variation of the needle, and for the chronometrical longitude (as well as for lunar observations, if the practice of lunar observations be not, as there is too much reason to fear it is, almost wholly discontinued). By preparing and issuing books of blank forms suitable for these purposes, and by requesting their return in accompaniment with the other reports to be transmitted to the Board of Trade at the conclusion of a voyage, the groundwork would be laid for the attainment of greatly improved habits of accuracy in practical navigation in the British mercantile marine.

The President and Council are aware that they have not exhausted the subject of this reply in what they have thus directed me to address to you; but they think that perhaps they have noticed as many points as may be desirable for *present* attention; and they desire me to add, that they will be at all times ready to resume the consideration if required, and to supply any further suggestions which may appear likely to be useful.

To the Secretary of the Lords of the
Committee of Privy Council for Trade.

I have the honour to be, Sir,
Your obedient Servant,
W. SHARPEY, Sec.

A subsequent correspondence passed, in May and June 1856, between the Royal Society and the Board of Trade. The following is an extract from one of the letters of the Royal Society in that correspondence.

EXTRACT.

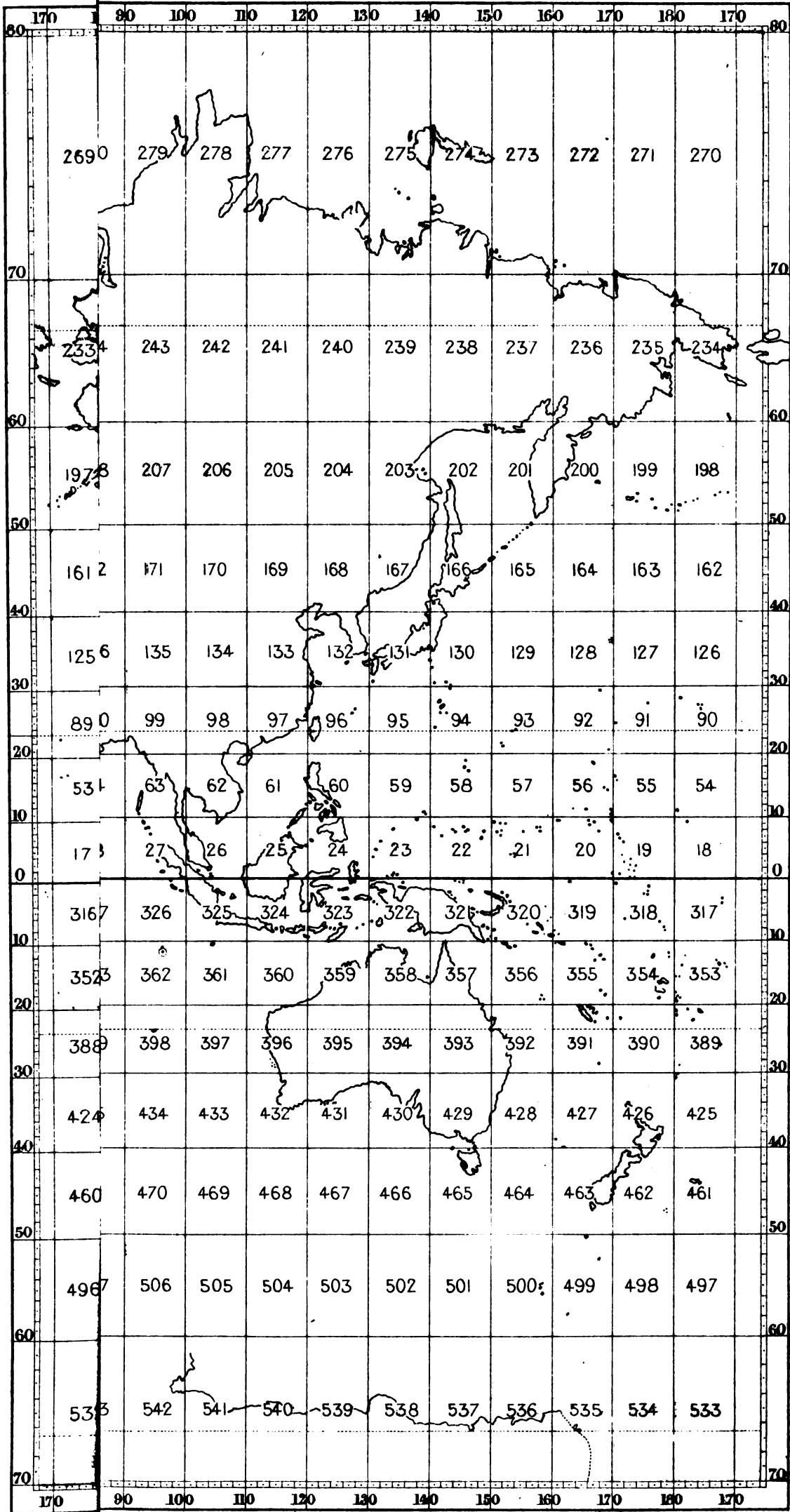
"It cannot be doubted that one of the most important objects of the Meteorological Department, both in a practical and a theoretical view, is the procurement of the statistics of the direction and force of the wind in different seasons of the year over those parts of the Atlantic Ocean which are most usually traversed by ships. The records kept by the vessels themselves, suitably co-ordinated, may be expected in the course of time to do much towards this very important purpose; but the Committee are desirous of bringing under the consideration of the Board of Trade the advisability of aiding and expediting the inquiry by establishing, as far as may be found convenient, self-recording anemometrical instruments on some of the islands of the Atlantic. Detached observations of the wind, taken at intervals on board ship, may be most valuable in filling up the spaces between fixed and unerring self-recording instruments, but are scarcely sufficient to procure such exact knowledge of the variations as is required not less for the purposes and improvement of navigation than for the complete theory of the laws which regulate these variations. The Azores, Madeira, Bermuda, Ascension, and St. Helena are all stations where continuous and exact anemometrical records might be obtained, probably with very little inconvenience and at a comparatively small cost, and would be most valuable in the relation above stated. A self-recording anemometer quite suitable for this purpose is now under construction at the Kew Observatory; and instruments on the same model might be procured complete, it is believed, at a cost of less than 50*l*, requiring no other alteration than the change, once in twenty-four hours, of the paper on which the instrument itself records the direction and force of the wind."

APPENDIX No. 3 (page 6).

STATEMENT of NUMBER of SHIPS supplied with INSTRUMENTS by the METEOROLOGICAL DEPARTMENT.

Year.	Ships supplied with Instruments.	
	Merchant.	Royal Navy.
1855	105	32
1856	109	59
1857	152	115
1858	152	107
1859	141	139
1860	111	118
1861	80	129
1862	54	111
1863	46	101
1864	26	96
1865	16	80
Total	992	1,087

s are able to furnish Statistics.



APPENDIX No. 5 (page 16).

FORM of TABLES for publishing METEOROLOGICAL RESULTS already obtained by METEOROLOGICAL DEPARTMENT.

Lat. - to -		Long. - to -		No. of Square.		
—		Barom. Mean.	Therm. Mean.	Wet Bulb Mean.	Vapour Tension.	No. of Obser.
January	- - -					
February	- - -					
March	- - -					
April	- - -					
May	- - -					
June	- - -					
July	- - -					
August	- - -					
September	- - -					
October	- - -					
November	- - -					
December	- - -					
Annual	- - -					
Quarterly.						
1. Dec., Jan., Feb.						
2. Mar., April, June.						
3. July, Aug., Sept.						
4. Aug., Nov., Dec.						

APPENDIX No. 6 (page 17).

FORM of TABLES suggested in page 17 for future publication of the METEOROLOGICAL MEANS.

The following remarks on the Table (p. xvii) are added by way of explanation. The following Form would contain the whole of the Meteorological Means that are to be extracted from the Register,* and it appears suitable to all of the Squares, except in two cases. 1st. In those where the seasons disagreed in a marked manner with any one of the calendar months, where it would simply be necessary to divide that month into two parts thus :—

February, 1-20

„ 20-28

2nd. When a Five-degree Square was the seat of two distinct meteorological systems. Here the Square would have to be treated in two separate divisions, on two different pages.

The Table, which is here necessarily given in folio, should be printed in a more compact form, across a 4to. page, such as is commonly employed for Meteorological Tables.

The Probable Precision of the entries in the table, is supposed to be partially indicated by the extent to which decimals would be employed ; for in every entry, the last figure but one should be considered as accurate, and the last figure as approximate only. Thus Barom. 29·75 would mean uncertainty in the 5 certainty in the 7 ; 29·7 would mean uncertainty in the 7, certainty in the 9. Thermometer 71·0 would mean that the 1 was accurate ; but 71 would mean that the 1 was approximate only.

We assume, in pursuance of our recommendation, p. 11, that the entries of the Mean Barometer, Mean Vapour tension, and Mean Humidity, will never consist of more than two decimal places. That those of Highest and Lowest Barometer, Mean Temperature, and Mean Wet bulb, will never consist of more than one decimal place ; and that the entries of all the rest will consist of integers only.

The remainder of the results concerning the Square would be less suitable to a fixed Tabular Form, because they are very different in character in the different Squares. They might be printed on the page that faced the Table, or separately, as might be found most convenient when the manuscript had been prepared. They would refer to the Ocean currents within the Square and to their Temperatures, and the variation of their limits in different seasons, and during the different years of observation, and the Magnetic Variations. The rest of the page would be occupied with descriptive text. It should be written concisely and methodically, and be so arranged that the same class of information should occupy, as nearly as may be, the same position in every page.

* See p. 10.—The upper current of the wind is rarely noticed by navigators, and therefore it would be utilized only in the case of a uniform drift, as in the Anti-Trades. Its existence would be noticed in the text descriptive of the contents of the Table.

METEOROLOGICAL MEANS, between S. Lats. 0° and 10°, W. Longs. 30° and 40°. SQUARE 303.a.

Years of Observations, 18 to 18	Barometer (corrected).				Temperature.				Aqueous Vapour.			Rain.	Cloud.	Wind.			Sea Surface.			Data.	
	Mean.		Variability.		Mean.	Variability.			Mean Wet Bulb.	Mean Tension.	Mean Humid- dity.	Per Cent. of Obser- vations.	Mean 0-10.	Mean Direction.	Mean Force.	Miles per Day.	Mean Temp.	Mean Drift.	Miles per Day.	No. of Obser- vations.	Authorities.
			Highest.	Lowest.		Highest.	Lowest.														
Months.																					
January	-																				
February	-																				
March	-																				
April	-																				
May	-																				
June	-																				
July	-																				
August	-																				
September	-																				
October	-																				
November	-																				
December	-																				
Annual	-																				
Quarterly.																					
1. Dec., Jan., Feb.																					
2. Mar., Apr., June																					
3. July, Aug., Sept.																					
4. Oct., Nov., Dec.																					

PER-CENTAGES of the DIRECTION of the WIND, and the WIND'S MEAN FORCE (0 to 12).

Months.	N.	N.N.E.	N.E.	E.N.E.	E.	E.S.E.	S.E.	S.S.E.	S.	S.S.W.	S.W.	W.S.W.	W.	W.N.W.	N.W.	N.N.W.	Cal.	Number of Obser- vations.
January																		
February																		
March																		
April																		
May																		
June																		
July																		
August																		
September																		
October																		
November																		
December																		
Annual																		
Quarterly.																		
1. Dec., Jan., Feb.																		
2. Mar., Apr., May																		
3. June, July, Aug.																		
4. Sept., Oct., Nov.																		

APPENDIX No. 7 (page 20).

Attempted Digest of Maxims employed by the Office in forecasting Weather.

In the following list we have endeavoured to collect and throw into a compact and methodical shape what appear to be the principal maxims employed by the Meteorological Department, when determining the forecasts. Considering the circumstances stated in our Report, it is obvious that this digest can be regarded as tentative only, as our means of determining these maxims are very imperfect. It is evident that the respective values of these maxims are widely different. Some of them rank among the long established truths of meteorological science, while others are clearly open to considerable doubt.

1. In the latitudes of the British Isles and of North-western Europe generally there are two, and only two, essentially different atmospheric currents of importance, one S.W., running from the equator towards the pole, and the other N.E., running from the pole towards the equator.
 2. The weather in this country depends almost wholly on the conflict, combination, alternate preponderance, or alternate succession, of portions of these opposite currents.
 3. The characteristics of the S.W. current lie not only in its general direction, but also in its quality, for it is light, warm, and moist. In other words, its presence is shown by a low barometer, by a high thermometer, and by a small difference between the wet and dry bulb thermometers.
 4. In a similar way the characteristics of the N.E. current lie not only in its general direction, but also in its quality, for it is heavy, cold, and dry. In other words, its presence is shown by a high barometer, by a low thermometer, and by a large difference between the wet and dry bulb thermometers.
 5. Not only is the actual presence of either current shown by its corresponding instrumental tests, but an approaching change from one current to the other is foretold by the instruments beginning to change their indications. [Hence, as changes of weather must necessarily commence at some places earlier than at others, there is great advantage in receiving by telegraph, information of the state of the weather, and of the instruments at many stations.]
 6. Owing to the frequent conflicts of portions of the S.W. and N.E. currents, followed by a temporary variation in their courses, the direction of the wind is by no means a certain test of the nature of the current of which it forms a part. A volume of air may even become wholly detached from its parent current, and be enclosed in that of its antagonist, and be drifted along with it.
 7. When the S.W. and N.E. currents intermingle, water is precipitated in the form of cloud, rain, or snow.
 8. Most of our violent storms travel bodily in a N.E. direction.
 9. The whole body of the atmosphere in our country travels in an E. direction, at the rate of from two to eight miles and hour.
 10. When S.W. and N.E. currents alternately prevail, the wind blowing over any station has a strong tendency to "veer," and not to "back." That is to say, the general order of the changes is N., E., S., W., N., and not N., W., S., E., N.
 11. The result of all rapid changes in the weather, or in any of the instrumental indications, is brief in duration, while that of a gradual change is more durable.
 12. Rapid changes of all kinds commonly presage violent atmospheric commotion.
 13. The wind usually blows from a region where the barometer is high to one where the barometer is low.
 14. The force of the wind is usually proportionate to the differences of barometric pressure, at adjacent places. In other words, the greater the barometric tension, the stronger the wind.
 15. Strong winds are far more steady in direction, than light or moderate winds.
 16. Great storms are usually shown by a fall of the barometer, exceeding 1 inch in 24 hours, or by a fall of nearly one-tenth of an inch in one hour.
 17. The barometer frequently continues high during a N.E. storm, but there is a fall of the thermometer.
 18. Gradual changes of weather are shown by a gradual rise or fall of the barometer; for instance, at the rate of one-hundredth of an inch in an hour.
 19. Great differences of temperature at the same or at adjacent places are followed by changes of weather.
 20. It is concluded from the foregoing remarks that a knowledge of the differences in the barometer and thermometer at different times in the same place, are no less important than a knowledge of those simultaneously observed at different places.
 21. Sea disturbance often precedes gales.
 22. Great storms are frequently preceded by excessive meteorological disturbance, as by heavy falls of rain or snow, by much lightning, by unusual cold, or by excessive heat.
 23. Calms may be due to either of three different states of weather:—
 - (1.) The appulse of winds coming together from opposite quarters.
 - (2.) The divergence of winds going towards opposite quarters.
 - (3.) The centre of cyclonic storms.
- The barometer rises in (1) and sinks in (2). It is extremely low in (3).
24. A considerable stress is laid by Admiral FitzRoy on the electrical indication of approaching weather. But as no returns of atmospheric electricity are received from the stations, and as no direct employment of these indications appears to be made in determining the forecasts, we have not included them among these maxims.

In making forecasts, the area of the British Isles is divided into six districts; and the average state of the weather in each district, is deduced from the weather reports received from the stations contained within it.

A forecast for each district is then made provisionally, based upon the foregoing maxims.

The separate forecasts are next collated and revised, regard being paid to the following particulars:—

- (a.) The mutual actions of the estimated weather in each of the six districts of the British Isles.
- (b.) Scattered information in respect to such distant areas of high and low barometer, as the limited number of continental stations can afford.
- (c.) Geographical conditions of mountain, plain, or sea, by which the free movements of the air may be affected.

We are unable to offer any satisfactory account of the method on which (a.) is discussed. Admiral FitzRoy states the conditions of this singularly complex problem of motion in a vapour-bearing elastic fluid to consist in "the energies exerted in specific directions, proportional to the respective differences of statical quantities at stations, to the distances between them and other stations (or groups of stations), and to the moments (or potentials) of these prevalent or approaching currents."—*Weather Book*, p. 217.

It is the custom of the Office to perform the whole of the foregoing operations, and to determine the forecast, after a simple inspection of the list of weather returns. No notes or calculations upon paper are ever made. The operation occupies about half an hour, and is conducted mentally.

The importance of a precise value being ascertained for each of the foregoing maxims, is clearly seen by taking a special case.

Suppose—

- (1.) A current over England from the N.E.;
- (2.) The barometer lowering, the thermometer rising, and S.W. winds beginning in places;
- (3.) The changes of barometer and thermometer to have been gradual;
- (4.) The barometer to be considerably lower to the S.E. on the continent.

Then the forecast would be:—

On account of (2), by maxims 5 and 3, an equatorial current appears about to set in.

On account of (3), by maxim 11, its duration will be considerable.

On account of (4), by maxim 13, the current will be deflected, and changed into a W. or N.W. wind.

Now, what is the probability that this forecast will be correct?

Its value, so far as the above maxims can help us, is clearly compounded of the values of three separate probabilities. If we are ignorant of the nature of each of these values, a very great uncertainty must attach itself to the value of the forecast.

For, let us first take the value of the separate probabilities as being $\frac{1}{10}$ respectively; that is to say, nine out of ten similar cases are supposed to be in accordance with the maxim, and one to disaccord with it. In other words, the odds in favour of each of the three maxims being true, are supposed to be as 9 to 1.

Then the probability in favour of the truth of the forecast is—

$$\frac{9 \times 9 \times 9}{10 \times 10 \times 10} = \frac{729}{1,000} = \frac{3}{4} \text{ pretty nearly.}$$

This would be a valuable forecast, because out of four such predictions three might be expected to succeed. In other words, the odds are 3 to 1 in favour of the forecast.

But if the separate chances are $\frac{1}{4}$ respectively, or, in other words, if the odds are 4 to 1, the value of the forecast sinks to

$$\frac{8 \times 8 \times 8}{10 \times 10 \times 10} = \text{about } \frac{1}{2}$$

that is, out of four such predictions only two may be expected to succeed; or, the odds are equal that it will succeed or fail.

Lastly, if we estimate the separate chances at $\frac{6}{10}$, or the odds at a little better than 2 to 1, then out of four such predictions only one may be expected to succeed. In other words, the odds are 3 to 1 against success.

The uncertainty and possible diminution of the value of the forecast, would range within considerably wider limits if it depended, as must often be the case, upon a yet longer chain of contingencies. If the value of the probability indicated by any of the maxims depended on should be of no value at all, as may appear to some to be the case with 7, 9, 17, 18, 19, and perhaps, to some extent, with 5 and 11 of the above list, then the introduction of any one of them into a chain of contingencies will diminish the value of the forecast by $\frac{5}{10}$, or by one half.

APPENDIX No. 8 (page 22).

Extract from Record of Meteorological Department, illustrating the Comparison of daily Forecast with Facts.

FOR an example, a forecast has been selected at haphazard, from pp. 164-5 of the Eleventh No. of the published *Meteorological Papers*. It seems to be a fair and typical instance of the contents of that publication. It was made on Wednesday, December 4, 1861, and refers to the weather till the following Friday.

The forecast for *North Britain* is—
“E. to S. and W. ; fresh to strong ; some rain.”

The facts given in the report of the following day are as follows:—

—	Direction.	Force.	Cloud.	Atmosphere.	Sea Dis- turbance.
Nairn - - -	E.S.E.	3	2	Blue sky.	2
Aberdeen - - -	S.S.W.	3	3	Clouds (detached).	2
Leith - - -	S.W.	2	2	Blue sky.	2
Berwick - - -	W.	2	8	Fog.	2
Ardrossan - - -	W.	4	3	Clouds (detached).	4

In addition we find, on reference to the record, which, as is stated in the Report, is kept in the Office, and is made up from *newspapers*, the following particulars:—

Nairn—S.E. to S. ; fresh, moderate, overcast.
Aberdeen—S.W. to S. ; b. c., and at night stormy, with rain.
Leith—4 p.m. to 10.30 p.m. gale W.S.W., showers.
Ardrossan—S.E. to S. ; overcast to rain.
Cromarty—S.S.W. ; fresh, fine.

The conclusion drawn by the Office from these facts is—

“North Britain, E.S.E. to W.S.W. and W., strong to moderate ; generally fine, some rain and
“ hail in places.”

The forecast for *Ireland* is—
“S. to W., fresh ; some rain, and to a gale.”

The facts given in the report of next day are as follows:—

—	Direction.	Force.	Cloud.	Atmosphere.	Sea Dis- turbance.
Portrush - - -	S.E.	1	2	Blue sky.	2
Galway - - -	W.	2	5	Clouds (detached).	1
Valentia - - -	W.N.W.	5	9	Overcast.	6
Queenstown - - -	W.N.W.	1	1	Blue sky.	1

In addition we find in the record made up from *newspapers* :—

Portrush—S. to S.E. ; light to moderate, overcast to rain.
Belfast—S.W. ; stormy, rain.
Limerick—S.W. ; rain.
Wicklow—S. ; fresh.
Strangford—S.S.W. ; stormy, rain.
Galway—moderate to stormy, overcast to rain.

The conclusion drawn by the Office from these facts is that the weather in Ireland on Thursday was—

“Wind S.W. to W.N.W., light to strong ; weather fine, but showery at times.”

The forecast for the *Central District* is—
“S.E. to S.W. ; fresh to a gale from S.W.”
The reports give—

—	Direction.	Force.	Cloud.	Atmosphere.	Sea Dis- turbance.
Liverpool - - -	W.S.W.	2	4	Clouds (detached).	1

In addition we find in the record made up from *newspapers* :—

Liverpool—S.E., light ; misty.

Bristol—S. ; stormy, cloudy.

Portmadoc—S.S.W. ; stormy, dry.

The conclusion drawn by the Office from these facts is that the—

“ Wind was from S.S.E. to W., light to strong, with fine clear weather.”

The forecast for the *East Coast* is—

“ S.E. to S. and W., fresh to strong.”

The reports give—

—	Direction.	Force.	Cloud.	Atmosphere.	Sea Disturbance.
Shields - -	W.N.W.	3	6	Overcast.	4
Scarborough - -	W.N.W.	1	8	Rain.	4
Yarmouth - -	S.	3	8	Rain.	4

In addition we find in the record made up from *newspapers* :—

Sunderland—S.W., light, variable ; fine.

Lynn—E.S.E., light ; fine, frosty.

Hull—S.W., moderate to stormy ; fine.

Scarborough—S.S.W. to W., moderate to stormy ; fine to o. q.

Orford—Southerly ; stormy.

The conclusion drawn by the Office from these facts is that the—

“ Wind was from S. to W. and N.N.W., fresh, with rain, to moderate and fine.”

The forecast for *South England* is—

“ S.E. to S. and W., fresh to strong, some rain, increasing to a gale ”

The reports give—

—	Direction.	Force.	Cloud.	Atmosphere.	Sea Disturbance.
London - -	W.	3	9	Overcast.	—
Dover - -	S.W.	3	9	Rain.	3
Portsmouth - -	N.W.	3	6	Overcast.	2
Portland - -	N.W.	1	1	Blue sky.	4
Plymouth - -	N.W.	3	1	Blue sky.	2
Penzance - -	N.W.	2	5 {	Clouds (detached).	2

In addition we find in the record made up from *newspapers* :—

Penzance—W. ; overcast.

Shoreham—S.E. to S., fresh and fine.

Dover—S. by E. to S., moderate ; fine.

London—E., light and foggy, to S.E., fine.

Weymouth—S.E. to S.S.W., fresh to light ; c., fine.

The conclusion drawn by the Office from these facts is that the—

“ Wind was S. to W. and N.W., strong to moderate ; rain in the early part of the morning, but fine during the day.”

On the Wednesday evening a south cone (▽) warning was hoisted, and on the Thursday morning it was hauled down again.

The Meteorological Department conclude from the above particulars, that for this day the forecast is a good one. This instance, which is taken entirely at random, is given to show how vague is the language employed by the Office, and how inadequate are the data in its possession for a just comparison of the forecasts with the facts that ensue.

Tables in form of Calendar (prepared by the Wreck Department) shewing for the year 1865 for the Ports of Plymouth and Shields respectively; the storm warnings issued; the Forecasts of Force of wind for each day of the year and the actual extreme Force of wind for each day in respect of which a warning was issued.

The first column shews in black characters the warning signal: drum, north cone, or south cone as the case may be. Where they are connected by a line it shews the two or three days over which according to Admiral FitzRoy's interpretation, the warning extends - where a second drum or cone is placed alongside it indicates a further separate warning.

The second and third columns shew in black Figures the No. in the Daily Forecast indicating the Force of wind predicted by the Forecast.

The fourth column shews in blue figures the actual extreme Force of wind in 24 hours.

The fifth shews in blue figures the duration of wind at its highest force during the 24 hours.

The sixth column contains opposite the days covered by each storm warning a blue cross thus \times when the actual force of wind did not reach 8: the symbol or single blue line thus \backslash when it did reach Force 8: and the symbol or double blue line thus \parallel when it exceeded Force 8: so that a glance at this column compared with the first column will shew how far the force of wind corresponded with the storm warning - The predictions are shewn in black and the actual facts in blue.

First Half of year 1865.

Port of Plymouth.

Days of the Month	JANUARY						FEBRUARY						MARCH						APRIL						MAY						JUNE					
	Warnings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical	Warnings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical	Warnings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical	Warnings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical	Warnings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical	Warnings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical
1	<input type="checkbox"/>						<input type="checkbox"/>	6.5	10.4	6	8 hrs	xx	<input type="checkbox"/>												<input type="checkbox"/>	5.6	4.6	4	4 hrs	xx	<input type="checkbox"/>	5.6	4.6	4	4 hrs	xx
2	<input type="checkbox"/>						<input type="checkbox"/>	6.4	8.	6	4 "	xx	<input type="checkbox"/>												<input type="checkbox"/>	5.6	6.	4	8 "	xx	<input type="checkbox"/>	5.6	6.	4	8 "	xx
3	<input type="checkbox"/>		6.				<input type="checkbox"/>	6.8	6.8	4	4 "	xx	<input type="checkbox"/>												<input type="checkbox"/>	5.6	6.4	4	4 "	xx	<input type="checkbox"/>	5.6	6.4	4	4 "	xx
4	<input type="checkbox"/>		6.8	4.8			<input type="checkbox"/>	4.8	5.8	4	8 "	xx	<input type="checkbox"/>												<input type="checkbox"/>	5.4	5.4	3	4 "	xx	<input type="checkbox"/>	5.4	5.4	3	4 "	xx
5			6.4	6.4				8.4	4.6				<input type="checkbox"/>													6.	5.6									
6			5.4	5.4				5.					<input type="checkbox"/>													4.6	4.6									
7			4.	6.5									<input type="checkbox"/>													5.	6.4	6.4								
8			4.6	4.6				5.	5.4				<input type="checkbox"/>													5.6	4.6									
9	<input type="checkbox"/>		6.		6	4 hrs	xx	5.	5.				<input type="checkbox"/>													6.5	4.6									
10	<input type="checkbox"/>		5.8	8	4 "			5.	5.				<input type="checkbox"/>													5.	5.									
11	<input type="checkbox"/>		6.	6.	6	4 "	xx	5.	5.																	4.5	6.									
12	<input type="checkbox"/>		6.5	6.8	9	8 "	xx	5.	5.6																	4.6	4.6									
13	<input type="checkbox"/>		6.4	8.5	9	3 "	xx	5.6																		5.6	5.6									
14	<input type="checkbox"/>		6.5	6.8	10	20 "	xx	6.																		4.5	4.5									
15	<input type="checkbox"/>		6.8	6.10	6	8 "	xx	6.5	5.																	5.4										
16	<input type="checkbox"/>		8.		4	4 "	xx	5.	5.																	5.6										
17	<input type="checkbox"/>		8.5	7	4 "		xx	5.	4.6	7	4 "	xx														5.	6.5									
18	<input type="checkbox"/>		8.4	8.4	6	8 "	xx	6.8	6.	7	4 "	xx														5.	5.6									
19	<input type="checkbox"/>		5.4	4.6	0	12 "	xx	6.8	6.8	10	8 "	xx														4.5	5.6									
20	<input type="checkbox"/>		6.4	6.4			xx	6.		6	4 "	xx														4.5	4.5									
21			5.	4.5					6.4																	6.4	5.4									
22			5.	5.				5.6	5.																	4.6										
23			5.					4.5	4.																	4.6	4.6									
24								2.5	5.	7	4 "	xx														5.4	4.5									
25								5.6	8.	7	4 "	xx														5.	5.									
26	<input type="checkbox"/>				4	4 "	xx	6.	4.6	6	4 "	xx														5.	5.4									
27	<input type="checkbox"/>				9	4 "	xx	5.8		0	12 "	xx														4.6	5.6									
28	<input type="checkbox"/>				4	4 "	xx		5.4																	6.4	6.5									
29	<input type="checkbox"/>				9	12 "	xx																			5.										
30	<input type="checkbox"/>				4	4 "	xx		4.5	4.5																5.4	6.4									
31	<input type="checkbox"/>				7	4 "	xx		4.6	4.5																										

Day & Son, (continued) Leth.

Second Half of year 1865.

Port of New York.

Days of the Month	JULY					AUGUST					SEPTEMBER					OCTOBER					NOVEMBER					DECEMBER					
	Warnings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical	Warnings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical	Warnings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical	Warnings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical	Warnings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical	
1	□	6.4	6	4	8 hrs	xx			6.4	6.5					5	5			□	8	6.5	5	1	16 hrs	xx	□	6.5	5	1	16 hrs	xx
2	□	6.4	6.5	3	4 "	xx			5	5.4					5.6			xx	□	6.5	5.6	1	12 "	xx	□	4.5	5.6	8	4 "		
3		5							5.6	5.6					6					5	4.6					□	5.6	5.8	4	8 "	xx
4			4.5						4.6						6.4	5.4				5.6	4.5					□	6	8	4 "		
5		5	5.6						6.4	6.4					4.6	4.6				5	4.5					□	10.4	6	4 "	xx	
6		5.6	5.6						4.5	4.5					5	5				4.6						□	6.5	8.5	8	4 "	xx
7	□	5.6	5.6	7	4 "	xx			4.5						5.4	5.6	7	4 hrs	xx	□	4.5	6				□	6.5	6.8	8	4 "	xx
8	□	5	5.6	6	12 "	xx			5	2.5					6	6	8	4 "	xx	□	4.5	6				□	6.5	6.4	1	4 "	xx
9	□	6.5	6.5	6	4 "	xx			5.4	4.6					6	4	4 "	xx	□	6	4	6				□	5.6	4	1	12 "	xx
10	□	5		5	8 "	xx			4.6						6.4	5		xx	□	6.4	6.4						4.5	4.5			xx
11			5						5.6	5.6					5.6	8	8 "	xx	□	5							5.6				
12		5	5						6.4	4.5					6.4	8.5	4 "	xx	□	5	4.6						5.6				
13	▽	5.6	5.6	6	4 "	xx			5.6	2.4					6.5	6.5	1	12 "	xx	□	4.6						5.6	5.6			
14	▽	5	5.6	6	8 "	xx			4.6	4.5					6.4	6.4				6.8							5	5			
15	▽	6.5	6.5	6	4 "	xx			5.4	5					6	5				6	5.6						5	5			
16	▽	5.4	6	3	8 "	xx			5.6	5.8	4 "	xx			4.6	7	4 "	xx	□	6.4	6.4	6	4 "	xx			5	4.5			
17		5.6							6	6	5	8 "	xx			6	4	12 "	xx	□	5	8	4 "	xx			5	5			
18									6.5	6	2	8 "	xx			6.4	5.8	5	4 "	□	4.6	5.5	4 "	xx			5.4				
19		5	5						5						5	5	12 "	xx	□	6.5	5.6	7	4 "	xx		▽	4	5	4 "	xx	
20		6	6						4.6	4.5					6	6	3	8 "	□	6	5.5	6	4 "	xx		▽	4.5	5.6	5	4 "	xx
21		5.6	5.6						4.6						5	6	4	4 "	□	6	4	9	4 "	xx		▽	4.6	6.6	4	12 "	xx
22		6.5	6.4						5.6	5.6					5.6	5.12	4 "	xx	□	6	5.12	4 "	xx				5.6	5.6			
23		5.4	5.4						4.5						5.6	8	6	5	4 "	□	5.6	6.5	4 "	xx			5.6	5.6			
24		4.5							4.6	5.6					5.6	5	4 "	xx	□	6	8	11	4 "	xx			5.6	5.6			
25									5.4	5					6	6	12	4 "	□	6	6	12	4 "	xx			5.6				
26		4.5	4.5						5						6.4	5	8	12 "	□	6	9	5.5	12 "	xx							
27		5	4.5						5	5.6					5	8.5	7	4 "	□	5.8	7	4 "	xx				5.6				
28		4.5							5.4	5					6.5	5	4 "	xx	□	5.8	9	4 "	xx		▽	4.6	4.6	6	4 "	xx	
29		5.4	5						6.5	5					5.6	9	4 "	xx	□	6.5	8.5	5	8 "	xx	▽	4.6	5.8	9	4 "	xx	
30		5.4	5.4						5	5					4.6	8	12 "	xx	□	6.4	5.6	1	16 "	xx	▽	6	10	6	8 "	xx	
31		5							5.6	5					8	6	4 "	xx	□	5.8	5.8	9	8 "	xx	▽	5.8	5.8	9	8 "	xx	

First Half of year 1865.
Port of Shields.

Days of the Month	JANUARY						FEBRUARY						MARCH						APRIL						MAY						JUNE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	Warnings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical	Warnings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical	Warnings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical	Warnings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical	Warnings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical	Warnings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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Day & Son, Limited, Lith.

Port of Shields
Second Half of year 1865

Day & Sun. London 1865

Days of the Month	JULY						AUGUST						SEPTEMBER						OCTOBER						NOVEMBER						DECEMBER					
	Warrings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical	Warrings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical	Warrings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical	Warrings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical	Warrings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical	Warrings hoisted	First Forecast	Second Forecast	Maximum Force of Wind	Duration of Wind	Typical
1	<input type="checkbox"/>	6.4.6	6	6	12	XX			4.6	6.4.5.6				5.	4.6	5.	4.6			<input type="checkbox"/>	8.4.8.5	6	24				6.5.5.	6	4	XX			6.5.5.	6	4	XX
2	<input type="checkbox"/>	6.4.6.5.6	16	XX				5.	6.8	6.4.6.4				5.						<input type="checkbox"/>	6.5.5.6	12					6.5.5.6	10	16			4.5.5.	10	16		
3		5.						5.6.5.6						6.							5.4.6						5.6.6.	10	12			5.6.6.	10	4		
4								4.6.4.6						4.6							5.6.4.5						5.8					6.				
5		5.	5.6					6.4.6.4						4.5							5.4.						5.8.5					6.5.8.5				
6		4.6.5.6						4.5.4.						4.5.4.5							4.6						6.4.6.8					4.5.4.5				
7	<input type="checkbox"/>	5.6.4.6.8	4					4.5						5.6.4.							4.5.6.						6.5.6.5					4.5.4.5				
8	<input type="checkbox"/>	6.5.5.6.8	4					5.						4.6.6.4							4.5.6.						5.6.4.					4.5.4.5				
9	<input type="checkbox"/>	6.5.6.5.6	16	XX				5.6.5.						5.4.5.							6.4.6.						5.6.4.					4.5.4.5				
10	<input type="checkbox"/>	5.7						5.6.4.6						6.4.5.							6.4.6.4						4.5.4.5					4.5.4.5				
11								5.6.5.6						4.6							5.	4.5					5.6					4.5.4.5				
12		5.	4.6					6.4.6						6.4.6.4							4.6						4.5.4.5					4.5.4.5				
13		5.6.4.6						4.6						4.5.4.5							5.8						4.5.4.5					4.5.4.5				
14		5.5.6						5.6.5.6						6.5.5.							6.4.4						5.5.					4.5.4.5				
15	<input type="checkbox"/>	6.5.6.5.9	4			XX		5.6.5						6.5.5.							6.4.6.4						4.6.4.					4.5.4.5				
16	<input type="checkbox"/>	5.4.6.5.9	4			XX		5.6.5.6.6						5.5.							4.6						5.6.					5.6.4.6				
17	<input type="checkbox"/>	5.4	6	1		XX		6.6.5						4.6.4.6							6.4.6.						5.6.4.6					4.6				
18	<input type="checkbox"/>	4	1	12		XX		5.6.5.6.5						5.6							6.4.8.5	10	16				4.6.8.5					4.				
19		5.	4					5.5.						4.							6.4.4.6	8	4				6.					4.5.6				
20		5.6.5.6						4.6.4.5						4.5.4.5							6.	8	4				5.6.6.	10	4			4.6.5.6	10	4		
21		5.6.5.6						4.6						5.	4.6						5.6.						4.6.5.6	7				5.6.4.5	8			
22		5.6.5.						4.5						6.4.5.6							6.5	10	8				5.6					5.6				
23		5.4.5.4						6.4.5						6.4.5.							6.6.6.6	9	4				5.6.5.6	8				5.6				
24		4.5						6.4.5.4						5.4.5.4							6.6.6.6	10	4				5.6.5.6	7				5.6.4.5	8			
25		2.4						5.5.						5.							6.8.5	10	8				5.6					5.6				
26		4.5.4.5						5.4						4.5.4							6.8.	10	8				5.6					5.				
27		4.5.4.						4.6						4.5.4.5							5.8	7	4				4.6.4.5	6				4.6.4.5	6			
28		4.5.4.5						4.6						4.6.4.6							5.6.9	9	8				4.6.4.5	11	4			4.6.4.5	10			
29		4.5.5.						5.						6.4.5.							6.5.8.5	10	4				4.6.5.8	10	4			4.6.5.8	10			
30		5.4.5.4						4.6.4.6						5.							6.4.5.6	9	4				5.8.5.8	10	4			5.8.5.8	10			
31		5.						5.6.5.						6.8							6.8	6	12				5.8.5.8	10	4			5.8.5.8	10			

APPENDIX No. 10 (page 24).

SPECIMEN OF ENGLISH DAILY WEATHER REPORT, FORECASTS, and REMARKS as issued by the METEOROLOGICAL DEPARTMENT of the BOARD of TRADE.

THE WEATHER.—METEOROLOGICAL REPORTS.

Wednesday, January 10, 8 a.m., 1866.	B.	T.	W.	F.	Ex.	D.	L.	R.	S.
Nairn - - -	29°07	34	W.	2	6	N.W.	c. o.	0·06	2
Aberdeen - - -	29°09	36	W.N.W.	3	3	W.S.W.	r. o.	0·12	3
Leith - - -	29°12	36	N.	4	3	S.W.	o. s.	0·04	3
Ardrossan - - -	29°11	39	N.	2	5	N.W.	c.	0·16	2
Greenock - - -	29°24	33	N.N.E.	2	5	W.	h. c.	0·40	1
Valentia - - -	29°33	40	N.N.W.	4	10	N.W.	h. r.	0·33	6
Liverpool - - -	29°10	42	N.N.W.	1	3	W.	c. o.	0·07	2
Holyhead - - -	29°09	43	W.N.W.	6	9	W.	c. o.	0·10	6
Pennance - - -	29°46	44	W.N.W.	6	9	W.N.W.	s.r. c.	0·31	5
Brest - - -	29°57	41	N.W.	3	9	W.N.W.	t. c.	0·24	3
L'Orient - - -	29°57	43	W.N.W.	5	9	W.	o. c.	0·20	7
Rochfort - - -	29°73	43	W.	7	9	N.W.	r. c.	0·55	3
Plymouth - - -	29°39	41	W.N.W.	3	2	N.W.	s.r. o.	0·17	5
Weymouth - - -	29°29	43	W.N.W.	5	3	W.N.W.	l. c.	0·05	4
Portsmouth - - -	29°24	41	W.	6	3	N.N.W.	s. o.	0·13	5
London - - -	29°15	39	W.N.W.	4	3	W.	l. c.	—	—
Yarmouth - - -	29°03	37	W.N.W.	6	10	W.N.W.	c. o.	—	1
Scarborough - - -	28°56	33	N.W.	2	6	W.N.W.	c. o.	0·16	3
Shields - - -	28°54	40	N.W.	2	3	N.W.	c.	—	2
Helmer - - -	28°39	42	W.S.W.	7	—	—	o.	—	6

EXPLANATION.

B.—Barometer, corrected and reduced to 32° at half-tide level; each 10 feet of vertical elevation causing about one-hundredth of an inch diminution, and each 10° above 32° causing nearly three-hundredths increase. T.—Thermometer exposed in shade. W.—Wind, direction, of (true—two points left of magnetic). F.—Force (1 to 12—estimated). Ex.—Extreme force since last report. D.—Direction of extreme force. L.—Initials:—b, blue sky c, clouds (detached); f, fog; h, hail; l, lightning; m, misty (hazy); o, overcast (dull); r, rain; s, snow; t, thunder. R.—Rainfall, snow or hail (melted), since last report. S.—Sea disturbance (1 to 9). Z.—Calm.

REMARKS.

Yesterday barometric pressure was as low as 28·4 in. on the coast of Norway; it was also low over the British Isles, and the greater part of the Baltic. Further to the eastward it increased rapidly—from 29·4 in. at Riga to 30·3 in. at Moscow, with a temperature of only 7° Fahrenheit. Over the eastern portion of the Baltic the winds were very strong from south-east; over the extensive area of very low pressure—extending from Scotland across the North Sea to Norway—there was

less wind then elsewhere. It again blew hard from west and north-west last night on our western and southern coasts, and the sea is very high on the coast of France. Snow has fallen in several places, and much lightning has been observed. Pressure has increased since yesterday, but it is again diminishing in the west of Ireland, and the weather appears likely to continue very unsettled for some days.

PROBABLE.

Thursday. On Northern Coasts. Friday.
Chiefly north-westerly, varying from a gale to moderate; some snow or rain. N.N.W. to W.S.W., fresh to strong, squally.

As above.

Western.
As above.

Similar to above.

Southern.
Similar to above.

Similar.

Eastern.
Similar.

Northern—Scotland. Western—Ireland, Wales, and adjacencies, Southern—English Channel, and Bay of Biscay. Eastern—Eastward England and North Sea.

APPENDIX No. 11 (page 24).

SPECIMEN OF FRENCH WEATHER BULLETIN AS ISSUED BY M. LE VERRIER.

BULLETIN INTERNATIONAL de l'Observatoire Impérial de Paris. 310 numéros. 2 forts volumes in-folio par an. Abonnements chez Chauvin, lith^e. No. 8 Rue d'Ulm.

France : 36 fr. par an.
Etranger : Frais de porte en sus.

Janvier 1865.
Mercredi 10. Page 1^{re}.

Etat atmosphérique de l'Europe à 8 h. du Matin.

Stations.	Pression 0°.	Temp ^a .	Vents Inférieurs.	Etat du Ciel.	Etat de la Mer.	Vents hier au fort.	Arrivée.
Paris -	746.5	3.8	o.s.o. au-fort	Peu nuageux	"	o.s.o. modéré	h.
Strasbourg -	749.1	3.0	o. faible	Pluie	"	o. au-fort	9.0
Mézidères -	744.5	"	o. faible	Couvert	"	N.E. faible	9.0
Dunkerque -	741.0	5.0	o.n.o. fort	Couvert	Tr. houleux	o. fort	9.0
Boulogne -	741.0	7.0	o. violent	Couvert	Tr. grosse	o. tr. fort	9.0
Le Havre -	747.3	6.2	N.O. tr. forte	Neige	Tr. grosse	N.O. tr. fort	9.0
Cherbourg -	747.3	7.0	"	Tr. nuageux	"	N.O. fort	9.0
Brest -	751.8	5.5	o.n.o. au-fort	Tr. nuageux	Grosse	o. tr. fort	9.0
Lorient -	752.9	6.2	o.n.o. au-fort	Nuageux	Grosse	o. tr. fort	9.0
Napoléon V ^{de} -	753.6	7.0	o. au-fort	Un peu nuageux	"	N.O. fort	9.0
Rochefort -	754.9	6.2	o. tr. fort	Nuageux	Tr. grosse	N.O. ouragan	9.0
Limoges -	755.3	2.0	o. au-fort	Couvert	"	N.O. faible	9.0
Montauban -	759.1	5.0	s.o. faible	Nuageux	"	s.o. au-fort	9.0
Bordeaux -	759.0	5.8	N.O. fort	Pluie	"	o. Impétueux	9.0
Bayonne -	760.0	7.0	N.O. violent	Pluie	Furieuse	par boue	9.0
Celte -	756.0	6.0	N.O. au-fort	Peu nuageux	Calme	N.O. modéré	9.0
Marseille -	756.1	5.9	N.O. fort	Nuageux	Grosse	o. modéré	9.0
Toulon -	754.0	6.0	N.O. violent	Peu nuageux	Grosse	N.O. faible	9.0
Antibes -	"	"	o. tr. fort	Nuageux	Calme	o.s.o. fort	9.0
Lyon -	757.4	7.0	s. faible	Un peu nuageux	"	s. faible	9.0
Besançon -	753.3	3.5	o. fort	Couvert	"	N.E. fort	9.0
Ancône -	743.4	5.9	o.n.o. au-fort	Couvert	Grosse	s.e. faible	9.0
Livourne -	749.4	10.5	o.s.o. tr. fort	Beau	Furieuse	"	9.0
Florence -	746.9	3.1	"	Beau	"	"	9.0
Trieste -	744.6	3.6	N.N.E. modéré	Pluvieux	Calme	"	10.0
Vienne -	745.9	2.0	N.O. faible	Couvert	"	s. au-fort	10.0
Messina -	741.4	10.0	o.n.o. tr. fort	Tr. nuageux	Clapoteuse	"	10.0
Naples -	748.4	7.0	o.s.o. tr. fort	Nuageux	Tr. agitée	s.s.o. tr. faible	10.0
Bruxelles -	741.1	4.0	s.s.o. faible	Nuageux	"	"	9.0
Greenwich -	740.8	3.9	o. modéré	Beau	"	"	10.0
Berne -	750.3	0.2	s.o. fort	Couvert, neige	"	s.o. tr. fort	10.0
Le Helder -	733.7	5.8	o. au-fort	Couvert	Tr. houleuse	"	11.0
Gröningue -	734.0	2.9	s.o. faible	Pluie	"	"	11.0
Yarmouth -	738.4	2.8	o.n.o. un peu fort	Nuageux	Calme	o.n.o. tr. fort	11.0
Scarborough -	736.4	3.8	N.O. faible	Pr. couvert	Peu agitée	o.n.o. un peu fort	11.0
Penzance -	748.4	6.7	o.n.o. un peu fort	Nuageux	Houleuse	o.n.o. fort	11.0
Odessa -	750.5	"	o.s.o. au-fort	Couvert	Houleuse	"	11.20
Nicolaieff -	754.2	3.3	s.e. au-fort	Couvert	"	"	11.20
Nairn -	738.8	1.7	o. faible	Pr. couvert	Belle	N.O. un peu fort	11.20
Libau -	733.3	2.5	o. "	Couvert	"	"	11.25
Riga -	733.5	1.1	s. au-fort	Couvert	"	"	11.25
Bilbao -	760.6	8.2	N.O. fort	Couvert	Tr. agitée	"	11.30

Berne - Hier soir, pluie; dans la nuit, neige.
Florence - Pluie dans la nuit.
Vienne - Hier, neige; o.n.
Naples - Orage avec forte pluie à 2 h. après minuit, en direction o.s.o. tr. fort.
Trieste - Pluie et grêle 281^{mm}.

(Here is given a map of Europe, showing the barometric pressure by curves and figures, and the direction of the wind by arrows.)

SITUATION GÉNÉRALE.

Tandis que le centre de la grande bourrasque qui sévit sur la Manche et sur l'Océan Atlantique se transporte lentement vers l'E., le baromètre a descendu rapidement depuis hier Mardi sur l'Italie, la mer Adriatique, et les côtes de Provence.

Cette baisse est due au mouvement orageux signalé hier dans les Pays-Bas, lequel se dirigeant vers les Alpes et l'Adriatique, a signalé sa présence par quelques éclairs vus hier soir à Paris, un violent orage qui éclate à 6 heures à Antibes, un autre à 2 h. du matin à Naples, et un dernier à Trieste, avec pluie et grêle amenant 251^{mm} d'eau.

Ce matin la neige tombait au Havre et à Berne.

Nous n'avons rien reçu de Suède, de Norvège, ni de Portugal. L'Espagne ne nous a envoyé que Bilbao.

APPENDIX No. 12 (page 28).

SPECIMEN of WEATHER REPORT sent to the WRECK DEPARTMENT of the BOARD of TRADE by OFFICERS of COAST GUARD and CUSTOMS subsequently to each STORM WARNING.

Form Wr. 25.
Issued by the Board of Trade.

Inspecting Officer's Division } Plymouth.
or Receiver's District }

REPORT by Inspecting Officer, of Coast Guard or Receiver of Wreck of the Warning Signals hoisted by Directions of Rear-Admiral FitzRoy, and of the State of the Weather during the 72 Hours following the Time of hoisting.

(This Form is to be addressed to "The Secretary, Marine Department, Board of Trade," as soon as possible after the last Observation is recorded herein.)

PARTICULARS OF SIGNAL AND DATE AND HOUR OF HOISTING.						
Description of Signal. (Here state whether "Cone with point up," "Cone with point down," "Drum alone," "Cone above drum," or "Cone under drum," &c. &c., as the case may be.) 1.	Place of hoisting Signal. 2.	Date of Warning. 3.				
		Year.	Month.	Day.	Hour.	
South Cone - - -	Plymouth -	1863	Dec.	1	11 A.M.	

STATE of WEATHER, to be recorded at the Time of hoisting the Signal, and, as far as practicable, once every Four Hours during the 72 Hours following.

Date and Hour of Observations. 4.		Direction of the Wind. (Here state the true direction of the wind, not the magnetic.) 5.	Force of the Wind. (Here state the force, according to the notation on the Forms Wr. 1.) 6.	State of the Weather. (Here state briefly the state of the weather, e.g., "bluesky," "fog," "mist," "rain," "snow," "lightning," "hail," &c. &c.) 7.	Remarks. (If the greatest violence of the wind occurs at a time not stated in column 4, the fact should be noted in this column with the date and hour of the occurrence, and with the direction and force of the wind. — See also foot note.) 8.
<i>Dec. 1.</i>	<i>11 o'clock A. M.</i> First observation.	<i>S.S.W.</i>	<i>No. 6</i>	<i>Cloudy</i>	<i>With rain.</i>
	<i>3 o'clock P. M.</i> Second observation.	<i>W.S.W.</i>	<i>" 4</i>	<i>"</i>	<i>" "</i>
	<i>7 o'clock P. M.</i> Third observation.	<i>S.S.W.</i>	<i>" 5</i>	<i>"</i>	<i>" "</i>
	<i>11 o'clock P. M.</i> Fourth observation.	<i>S.</i>	<i>" 9</i>	<i>"</i>	<i>With heavy rain.</i>
<i>" 2.</i>	<i>3 o'clock A. M.</i> Fifth observation.	<i>S.S.W.</i>	<i>" 6</i>	<i>"</i>	<i>" " "</i>
	<i>7 o'clock A. M.</i> Sixth observation.	<i>W.</i>	<i>" 4</i>	<i>"</i>	<i>" " "</i>
	<i>11 o'clock A. M.</i> Seventh observation.	<i>W.N.W.</i>	<i>" 8</i>	<i>"</i>	<i>2/12/63. A.M. 10., Wind N.W. No. 10. with showers of rain.</i>
	<i>3 o'clock P. M.</i> Eighth observation.	<i>W.</i>	<i>" 6</i>	<i>"</i>	<i>Telegram to hoist drum received at noon. 2/12/63.</i>
<i>" 3.</i>	<i>7 o'clock P. M.</i> Ninth observation.	<i>W.S.W.</i>	<i>" 4</i>	<i>"</i>	<i>With rain.</i>
	<i>11 o'clock P. M.</i> Tenth observation.	<i>S.S.W.</i>	<i>" 6</i>	<i>"</i>	<i>" "</i>
	<i>3 o'clock A. M.</i> Eleventh observation.	<i>S.W.</i>	<i>" 7</i>	<i>"</i>	<i>" "</i>
	<i>7 o'clock A. M.</i> Twelfth observation.	<i>N.W.</i>	<i>" 7</i>	<i>"</i>	
<i>" 4.</i>	<i>11 o'clock A. M.</i> Thirteenth observation.	<i>N.W.</i>	<i>" 10</i>	<i>"</i>	<i>With heavy showers of hail and rain.</i>
	<i>3 o'clock P. M.</i> Fourteenth observation.	<i>N.N.W.</i>	<i>" 10</i>	<i>"</i>	<i>" " "</i>
	<i>7 o'clock P. M.</i> Fifteenth observation.	<i>N.W.</i>	<i>" 9</i>	<i>"</i>	<i>" " "</i>
	<i>11 o'clock P. M.</i> Sixteenth observation.	<i>N.W.</i>	<i>" 5</i>	<i>Clear.</i>	
<i>" 4.</i>	<i>3 o'clock A. M.</i> Seventeenth observation.	<i>W.N.W.</i>	<i>" 4</i>	<i>"</i>	
	<i>7 o'clock A. M.</i> Eighteenth observation.	<i>W.N.W.</i>	<i>" 3</i>	<i>"</i>	

N.B.—The time at which the wind is at its greatest force should in all cases be specially noted, and particulars should be given. If the greatest force does not happen near the time of one of the four-hourly observations, the particulars should be entered in addition to the usual observations.

Signature of Officer forwarding the Report.

DIRECTIONS ON THE BACK OF THE FORM WR. 25.

The Receiver is informed that directions have been issued by Admiral FitzRoy, to the effect that the warning signal named in column 1 is to be hoisted at the place named in column 2.

The Receiver is requested to cause one of these forms Wr. 25, to be returned to the Board of Trade, with a report in columns 5, 6, 7, and 8, showing as far as he is able, the direction and force of the wind, and the state of the weather during the 72 hours following the warning.

In order that the Form Wr. 25 may be filled up readily and accurately, some person in the service of the Coast Guard or Customs should be directed to observe and keep a note of the state of the weather whenever and as soon as a signal is hoisted, and, as far as possible, at intervals of four hours during the subsequent three days.

This Form need not be inclosed in an envelope when returned to the Board of Trade.

T. H. FARRER, Secretary.

Analysis of Reports (made to the WRECK DEPARTMENT OF THE BOARD OF TRADE) upon the Weather which followed the Exhibition of Storm Signals, from 1st July to 31st December 1861, showing the number of places warned, the nature of the Signals, the number of places at which the Wind did and did not reach a force above seven (i.e. 8 to 12); the time within which it reached such a point, and the number of places at which the direction of the Wind accorded with the prediction.

Date of Warning.	Nature of Signal.	Number of Places of warned.	Force of Wind.												Direction of Wind.			
			Number of Places where Wind after Warning.												Number of places where Wind at highest after warning agreed in any part of compass with Signal.			
			Rose above 7.												When below 7.	When above 7.	Total.	
			During first 12 hours.	During second 12 hours.	During third 12 hours.	During fourth 12 hours.	After 48 hours.	And at its maximum reached						Total.				Did not rise above 7.
								8	9	10	11	12						
Col. 1.	Col. 2.	Col. 3.	Col. 4.	Col. 5.	Col. 6.	Col. 7.	Col. 8.	Col. 9.	Col. 10.	Col. 11.	Col. 12.	Col. 13.	Col. 14.	Col. 15.	Col. 16.	Col. 17.	Col. 18.	
July 4 -	Drum -	14	2	0	0	0	0	2	0	0	0	0	2	12	-	-	-	
" 5 -	Cone point up -	9	0	0	0	0	0	0	0	0	0	0	0	9	1	0	1	
" 25 -	Ditto -	9	1	0	0	0	0	1	0	0	0	0	1	8	5	0	5	
September 13 -	Bitto -	24	11	3	0	1	1	4	7	4	0	1	16	8	6	6	12	
" 21 -	Drum -	18	0	0	3	3	2	6	3	3	0	0	12	6	-	-	-	
" 24 -	Cone point down	19	0	2	1	0	1	3	1	0	0	0	4	15	7	3	10	
October 11 ¹ -	Cone point up -	26	11	3	3	0	0	4	6	5	3	1	19	7	0	0	0	
" 11 ² -	Drum -	7	3	1	0	0	0	3	0	1	0	0	4	3	0	0	0	
" 11 ³ -	Cone point down	7	4	1	1	0	0	2	1	3	0	0	6	1	0	0	0	
November 2 -	Drum -	22	17	0	0	0	1	5	9	2	1	1	18	4	-	-	-	
" 11 -	Cone point up -	20	1	0	1	8	2	3	6	2	0	1	12	8	8	11	19	
" 13 -	Drum -	30	8	4	1	0	0	3	6	2	0	0	12	17	-	-	-	
" 20 -	Cone point down	27	4	8	1	2	2	8	7	6	1	0	17	10	10	7	17	
" 21 -	Drum -	6	4	0	1	0	0	2	1	2	0	0	5	1	-	-	-	
" 22 -	Cone point up -	12	0	0	0	2	10	5	0	6	1	0	12	0	0	0	0	
" 25 -	Drum -	31	23	1	0	0	0	7	7	7	2	1	24	7	-	-	-	
December 5 -	Cone point down	40	4	1	1	1	4	5	3	2	1	0	11	29	19	9	28	
" 7 -	Drum -	38	8	2	2	1	2	6	6	3	0	0	15	23	-	-	-	
" 13 ¹ -	Cone point down	30	6	4	4	0	1	7	5	1	1	1	15	15	6	8	14	
" 13 ² -	Drum -	24	5	3	0	0	0	2	4	1	1	0	8	16	-	-	-	
		413*	112	35	21	20	26	75	72	50	11	6	214	199	62	44	106	

* Out of which 283 denote direction.

Signification of Signals.

Drum - - - - - { Gales successively.
Cone with point up - - - - - { No quarter particularized.
Cone with point down - - - - - { Gales repeated, probably from the north.
Cone with point down - - - - - { Gales probably from the south.

Number denoting force of Wind.

0. Calm.
1. Light air.
2. Light breeze.
3. Gentle breeze.
4. Moderate breeze.
5. Fresh breeze.
6. Strong breeze.
7. Moderate gale.
8. Fresh gale.
9. Strong gale.
10. Whole gale.
11. Storm.
12. Hurricane.

APPENDIX NO. 14 (pages 30 and 32).

ANALYSIS OF REPORTS (made to the WRECK DEPARTMENT of the BOARD OF TRADE) upon the Weather which followed the Exhibition of the Storm Signals at ALL THE PLACES WARNED during the Month of December in each of the Years 1863, 1864, and 1865.

Table 1, December 1863.

Date of Warning.	Nature of Warning.	Number of Places from which Reports received.	Number of Places at which the Wind at its <i>greatest force</i> DID NOT REACH FORCE 8,								Number of Places at which the Wind at its <i>greatest force</i> REACHED FORCE 8 or upwards.													Total.	and at which the <i>actual</i> direction agreed with the di- rection <i>indicated</i> by the Warning.
			but reached force								At the time of hoisting the Signal.	Within 4 hours.	Within 8 hours.	Within 12 hours.	Within 16 hours.	Within 20 hours.	Within 24 hours.	Within 28 hours.	Within 32 hours.	Within 36 hours.	Within 40 hours.	Within 44 hours.	Within 48 hours.		
			0	1	2	3	4	5	6	7															
Dec. 1	South Cone.	67	-	-	-	-	-	1	-	3	4	3	3	1	1	4	4	1	6	30	10	-	63	21	
" 2	Drum.	25	-	-	-	-	-	-	-	3	3	1	5	-	-	6	2	3	5	-	-	-	22	—	
" 5	South Cone.	68	-	-	-	-	-	1	11	15	27	4	4	1	1	-	-	1	3	5	11	11	41	34	
" 16	"	70	-	-	-	-	-	3	12	7	22	7	3	6	10	11	6	5	-	-	-	-	48	3	
" 27	"	69	-	-	2	-	1	14	23	15	55	2	3	2	2	-	-	-	2	2	1	14	4	4	
" 31	Drum.	67	-	-	2	-	-	5	16	9	32	8	5	6	6	1	-	2	2	5	-	-	35	—	
Totals		366	-	-	4	-	1	24	62	52	143	25	23	16	20	22	12	12	16	42	23	12	223	62	

Table 2, December 1864.

Dec. 13	Drum.	70	-	-	-	2	5	9	27	11	54	4	3	1	-	-	-	2	1	2	3	16	-
" 22	North Cone.	15	-	-	-	-	-	1	7	5	13	2	-	-	-	-	-	-	-	-	-	2	1
Totals	-	85	-	-	-	2	5	10	34	16	67	6	3	1	-	-	-	2	1	2	3	18	1

Table 3, December 1865.

Dec. 1	South Cone.	27	-	-	-	-	1	3	6	3	13	-	4	1	-	1	-	1	4	1	1	1	14	12
" 2	"	16	-	-	-	-	-	-	-	-	-	4	2	1	-	-	-	-	6	2	1	-	16	16
" 2	Drum.	24	-	-	-	-	-	-	6	3	9	1	3	1	1	-	-	1	4	3	1	-	15	-
" 4	"	30	-	-	-	-	-	-	3	2	5	10	2	-	4	-	-	-	2	3	4	-	25	-
" 6	South Cone.	15	-	-	-	-	-	1	8	5	14	-	1	-	-	-	-	-	-	-	-	-	1	1
" 19	"	42	-	-	-	-	-	1	8	10	19	3	3	4	-	1	-	3	3	4	1	1	23	21
" 21	"	10	-	-	-	-	-	4	2	2	8	1	-	1	-	-	-	-	-	-	-	-	2	2
" 23	"	32	-	-	-	-	-	1	3	7	11	4	2	-	-	2	2	-	4	4	3	-	21	20
" 28	"	70	-	-	-	-	-	-	1	1	2	4	7	8	4	9	10	16	8	1	1	-	68	61
" 30	Drum.	69	-	-	-	-	-	-	-	1	1	13	11	19	18	4	2	-	-	1	-	-	68	-
Totals -		835	-	-	-	-	1	10	37	34	82	40	35	35	27	17	14	21	31	19	12	2	253	183

APPENDIX No. 15 (pages 30 and 32).

ANALYSIS of REPORTS (made to the WRECK DEPARTMENT of the BOARD OF TRADE) upon the Weather which followed the Exhibition of the Storm Signals at Aberdeen, Galway, Harwich, Holyhead, Plymouth, Shields, and Yarmouth for the whole of the Years 1863, 1864, and 1865.

TABLE 1.—December 1st to January 31st, 1863.

Places warned.	No. of Reports received.	Number of Times at which the Wind, at its <i>greatest force</i> DID NOT REACH FORCE 8									Number of Times at which the Wind, at its <i>greatest force</i> REACHED FORCE 8, or upwards.														And at which the <i>actual</i> Direction agreed with the Direction indicated by the Warning.	No. of Signals hoisted.			
		but reached Force								Total.	At the Time of hoisting the Signal.	Within 4 hours.	Within 8 hours.	Within 12 hours.	Within 16 hours.	Within 20 hours.	Within 24 hours.	Within 36 hours.	Within 48 hours.	Within 60 hours.	Within 72 hours.	Total.	Drum.	S. Cone.		N. Cone.	Total.		
		0	1	2	3	4	5	6	7																				
Aberdeen	39	-	-	-	-	2	3	5	15	25	3	1	1	2	-	-	1	1	-	4	1	14	2	9	3	2	14		
Galway	40	-	-	-	-	1	4	4	5	14	6	2	6	1	1	1	-	2	2	2	3	26	1	19	5	2	26		
Harwich	25	-	-	-	-	1	-	-	2	3	-	3	5	5	1	1	2	1	-	3	1	22	4	17	4	1	22		
Holyhead	39	-	-	-	-	2	2	4	13	21	4	1	4	2	-	1	1	-	5	-	-	18	3	11	7	-	18		
Plymouth	35	-	-	-	-	3	1	14	6	24	3	3	-	-	-	1	2	-	1	1	-	11	2	8	3	-	11		
Shields	38	-	-	-	-	-	3	2	1	6	15	-	3	2	2	2	1	3	3	1	-	32	4	26	3	3	32		
Yarmouth	38	-	-	-	1	4	1	10	13	29	-	2	2	2	-	-	2	-	1	-	-	9	-	8	-	1	9		
Totals	254	-	-	-	1	13	14	39	55	122	31	12	21	14	4	6	9	7	12	11	5	132	16	98	25	9	132		

TABLE 2.—January 1st to December 31st, 1864.

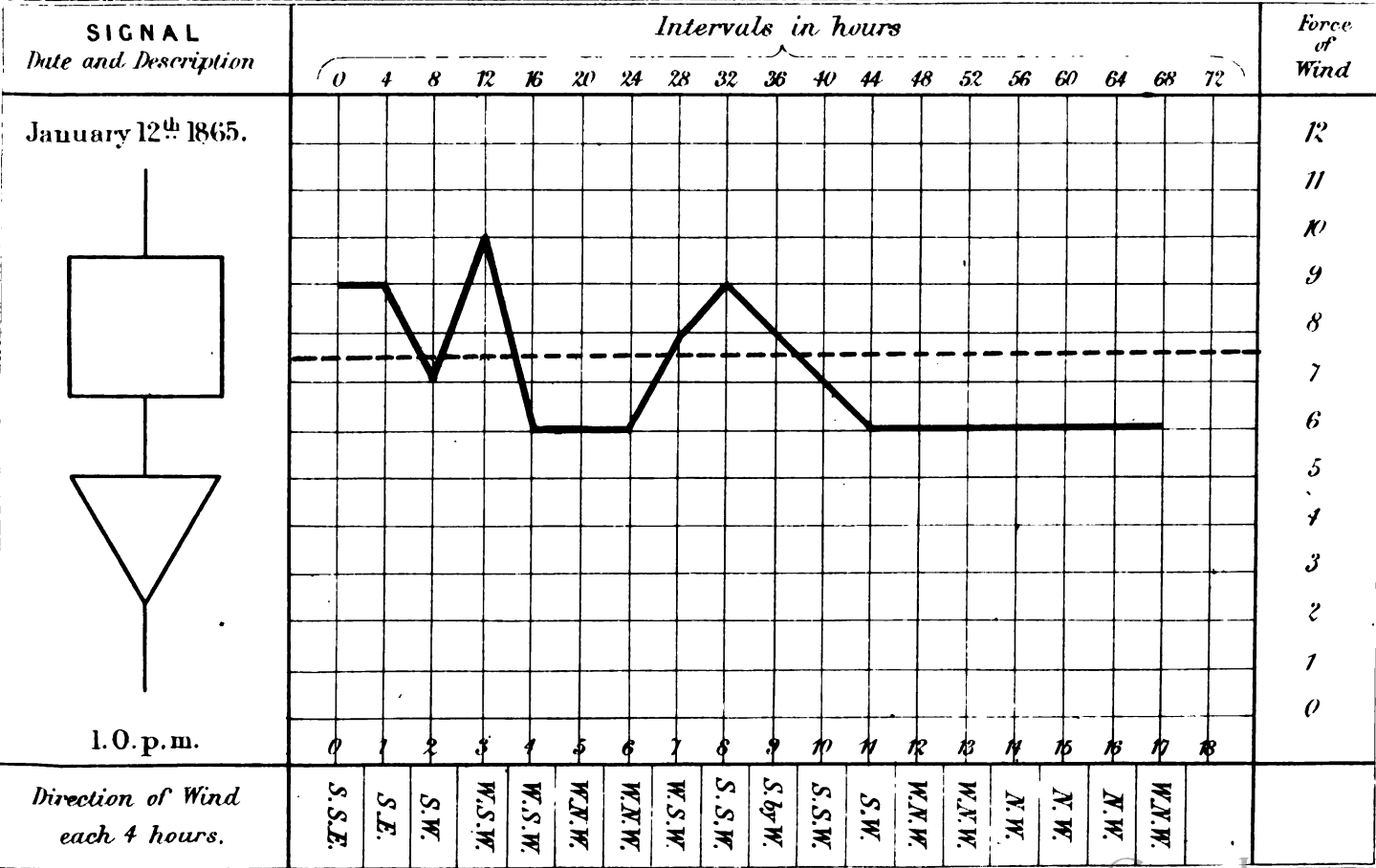
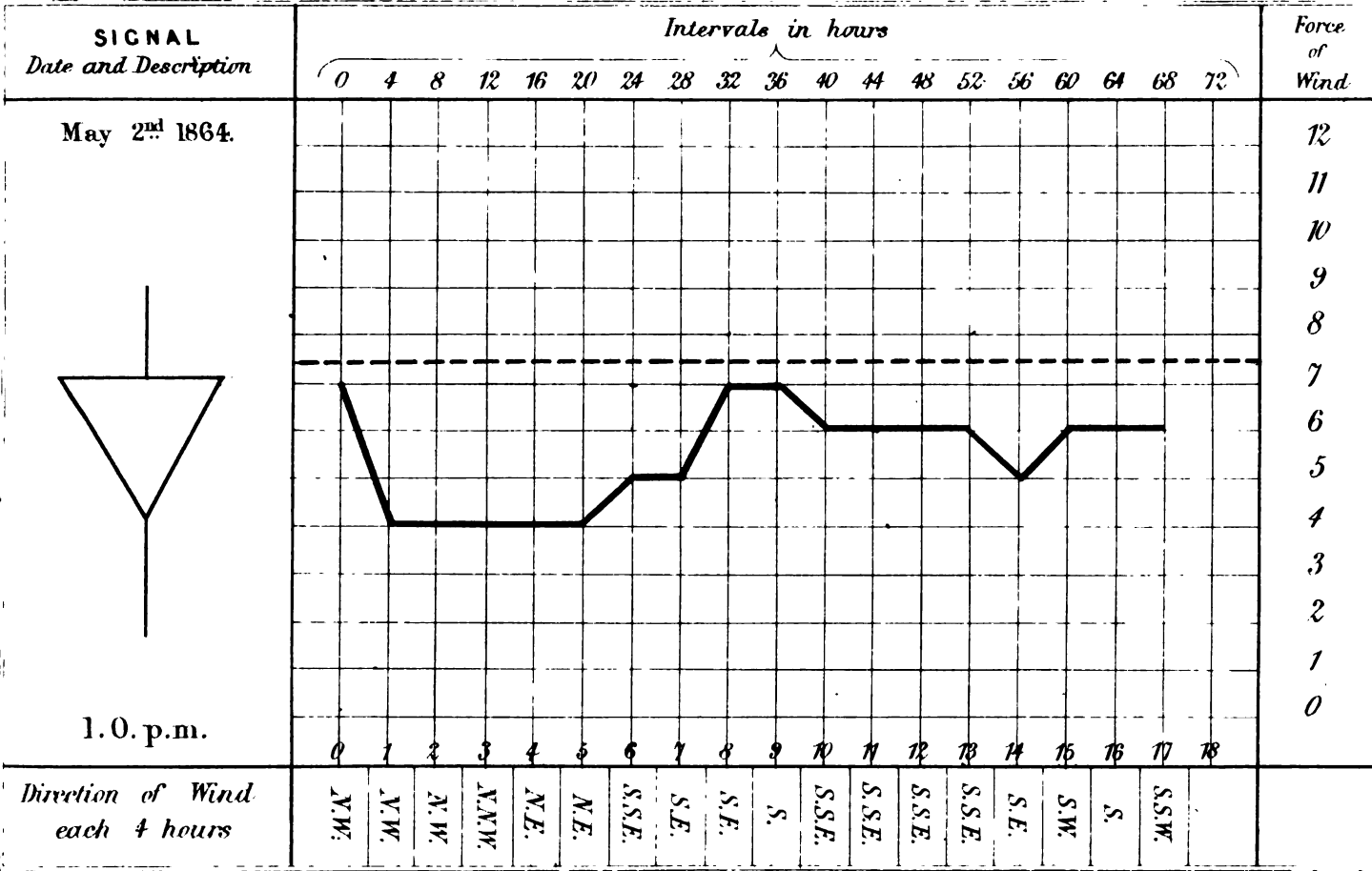
Aberdeen	25	-	-	-	-	2	1	-	6	9	3	-	1	3	2	-	1	4	1	1	-	16	2	10	5	1	16
Galway	32	-	-	-	-	2	1	8	4	15	-	2	2	4	1	2	-	2	3	1	-	17	3	7	10	-	17
Harwich	23	-	-	-	-	-	1	1	11	13	-	1	2	2	-	-	-	2	-	3	-	10	2	7	3	-	10
Holyhead	28	-	-	-	-	1	5	5	9	20	-	1	2	1	-	1	2	-	-	1	-	8	3	4	4	-	8
Plymouth	23	-	-	-	-	1	2	7	4	14	1	1	2	-	-	1	-	2	1	1	-	9	3	5	4	-	9
Shields	21	-	-	-	-	-	1	-	7	8	4	1	2	-	-	1	-	1	3	1	-	13	4	8	5	-	13
Yarmouth	19	-	-	-	2	-	-	5	7	14	-	1	1	-	-	1	-	-	-	1	1	5	1	4	1	-	5
Totals	171	-	-	-	2	6	11	26	48	93	8	7	12	10	3	6	3	11	8	9	1	78	18	45	32	1	78

TABLE 3.—January 1st to December 31st, 1865.

Aberdeen	37	-	-	-	1	1	2	6	10	20	1	2	2	2	-	1	-	4	1	4	-	17	3	12	2	3	17
Galway	37	-	-	-	2	3	6	12	5	28	-	2	2	-	-	1	-	2	-	2	-	9	2	5	3	1	9
Harwich	32	-	-	-	-	1	4	3	9	17	1	-	1	2	2	1	-	1	4	3	-	15	1	13	1	1	15
Holyhead	34	-	-	-	-	1	2	4	14	21	-	1	-	1	2	2	-	-	2	3	2	13	1	11	1	1	13
Plymouth	34	-	-	-	-	1	2	6	5	14	1	5	-	1	-	1	3	1	3	3	2	20	4	15	4	1	20
Shields	31	-	-	-	-	-	-	2	2	4	3	5	3	3	1	-	1	3	4	4	-	27	3	23	3	1	27
Yarmouth	31	-	-	-	-	3	3	6	5	17	2	-	-	1	2	-	1	3	-	2	3	14	1	12	1	1	14
Totals	236	-	-	-	3	10	19	39	50	121	8	15	8	10	7	6	5	14	14	21	7	115	15	91	15	9	115

EXAMPLE OF A DIAGRAM PREPARED IN THE
WRECK DEPARTMENT SHEWING THE FORCE AND DIRECTION OF WIND FOLLOWING A STORM
SIGNAL AT EACH FOUR HOURLY PERIOD OF OBSERVATION DURING 72 HOURS AFTER HOISTING
THE SIGNAL AT 18 INTERVALS OF 4 HOURS EACH.

SHIELDS



ABSTRACT of OPINIONS from the Ports concerning the value attached to the Storm Warnings at the present time (1866).

Questions.

AN inquiry is being made into the Meteorological Department of the Board of Trade, and we are anxious to learn, after some years' experience, what is the real opinion of seafaring men concerning the value of the late Admiral FitzRoy's signals. Can you help us by telling me what is thought of them by those most competent to judge, at () .

I remain, &c. &c.

(Signed) T. H. FARRER.

ANSWERS to the above.

Captain Rutherford, R.N. -	Wick, N.B.	Signals not hoisted so far north.
Mr. James Kellas, Secretary to the Local Marine Board.	Aberdeen -	"The utility of the signals is generally acknowledged, and for some time back the subject has obtained more attention among seafaring men."
		"The signals for a considerable time have been very accurate."
Mr. Anthony Trail, Examiner in Seamanship, Local Marine Board.	Dundee -	"The correctness of the Storm Signals at this port is a matter of common remark;" they "are very generally appreciated."
Shipowners' Society, through Mr. Ingham, M.P.	South Shields -	"The exhibition of the Storm Signals are of much practical value, by giving timely warning of approaching storms."
The Pilots, through Mr. Ingham, M.P.	South Shields -	"The Storm Signals are of great importance and great practical value, as affording timely and very correct intimations of coming gales and storms."
Mr. John Lambton, Superintendent Mercantile Marine Office.	Sunderland -	"The Signals are regarded as decidedly valuable." A daily account of the weather kept by the dock master "shows that the warnings have for some time now been more correct and reliable than formerly."
Mr. John Mackenzie, Collector of Customs.	West Hartlepool -	"The general feeling is in favour of the utility of the Signals, which are much more trusted and attended to by seafaring men than when the system was first established."
Mr. C. J. Palmer, Receiver of Wreck.	Great Yarmouth -	"There is a general and growing admission that the Signals are correct;" they "are watched by seafaring men, and I have heard the admission that they have improved in accuracy, especially lately."
Mr. G. J. Flower, Collector of Customs.	Deal -	"There is but one real opinion concerning the value of the Signals. They have been the means of saving life and property to an immense extent."
Mr. J. Kelly, Secretary to the Local Marine Board.	Plymouth -	Those most likely to be informed on the subject, "Do not consider that the Signals are in any great degree of value to seafaring persons."
Mercantile Marine Association.	Liverpool -	"Decidedly in favour of the Signals being continued."
Mr. Towson, Secretary and Examiner in Navigation, Local Marine Board.	Liverpool -	"There exists an universal opinion that these Signals are very valuable; that the amount of accuracy has gradually increased."

APPENDIX No. 18 (page 39).

A RETURN of SUMS voted for and expended by the METEOROLOGICAL DEPARTMENT of the BOARD OF TRADE made up to the 1st December 1865, the Pay of the Clerks being calculated to the 30th September only of that year. The Return of Expenditure for 1865-6 is of course incomplete in this as well as in other respects.

For the Year	Parliamentary Vote.		Expenditure charged to Parliamentary Vote.						Additional Salaries paid out of Vote for Board of Trade Establishment.	Total Expenditure on Account of Meteorological Department.													
	Board of Trade.	Admi- ralty.	For Telegraphy and Storm Warnings.	For Instruments and Inci- dental Expenses.		Salaries.																	
				Board of Trade.	Admiralty.	Board of Trade.	Admiralty.																
	£	£	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.									
1856-7	3,200	1,000	—			1,772	8	4	394	15	0	350	8	0	354	12	0	368	15	0	3,240	18	4
1857-8	3,200	1,000	—			1,212	3	3	1,237	8	0	359	17	0	326	12	0	511	5	0	3,647	0	3
1858-9	3,200	1,000	—			1,731	18	1	554	19	0	561	14	6	364	10	0	400	9	9	3,613	11	4
1859-60	2,400	1,000	—			1,203	7	8	757	3	9	643	3	5	387	15	0	353	15	0	3,345	4	10
1860-1	2,300	1,000	218	1	5	868	1	5	519	12	2	711	18	0	410	15	4	378	15	0	3,107	3	4
1861-2	2,800	1,000	1,778	0	8	1,360	12	3	547	6	2	804	18	6	430	8	4	403	15	0	5,325	0	11
1862-3	3,800	1,000	2,334	15	0	630	17	1	618	13	6	829	9	10	430	8	4	366	5	0	5,210	8	9
1863-4	3,800	1,000	2,989	0	11	1,650	4	0	726	8	9	603	9	8	205	16	8	929	0	4	7,104	0	4
1864-5	3,700	570	2,735	10	0	314	2	8	830	12	0	246	11	10	—			1,333	13	11	5,460	10	5
1865-6 incom- plete.	4,200	570	1,567	2	1	198	10	2	155	18	10	54	8	4	—			344	12	7	2,320	12	0
TOTAL -	32,600	9,140	11,622	10	1	10,942	4	11	6,342	12	2	5,165	19	1	2,910	17	8	5,390	6	7	42,374	10	6

LONDON :

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Printers to the Queen's most Excellent Majesty.
For Her Majesty's Stationery Office.

STEAM VESSELS.

RETURN to an Order of the Honourable The House of Commons,
dated 16 March 1866;—for,

A RETURN, “in a TABULAR FORM, with Consecutive Numbers, of the whole of the STEAM VESSELS Registered in the United Kingdom on or before the 1st day of January 1866; stating, in separate Columns, the following Particulars :—Official Number of Vessel; Vessel’s Name; Port of Registry; Date of Registry; Date of Build; Registered Owners; Dimensions of Vessels in Length and Breadth and Depth of Hold; Tonnage (exclusive of Engine Room); and Gross Tonnage, distinguishing Vessels Built of Iron and Vessels having Screw Propellers; also, distinguishing Vessels measured under the Merchant Shipping Act of 1854 from those measured under previous Acts; and Estimated Horse Power of their Engines, and giving the Aggregate Number of Vessels and Amount of Tonnage; with an INDEX for easy reference attached to it, giving the Names of the Vessels in Alphabetical Order, with Numbers to each corresponding with the Consecutive Numbers in the Return (in continuation of Parliamentary Paper, No. 422, of Session 1865).”

(*Mr. Thomas Baring.*)

Ordered, by The House of Commons, to be Printed,
29 June 1866.

RETURN, in a TABULAR FORM, with Consecutive Numbers, of the whole of the STEAM VESSELS Registered in the United Kingdom on or before the 1st day of January 1866; stating, in separate Columns, the following Particulars:—Official Number of Vessel; Vessel's Name; Port of Registry; Date of Registry; Date of Build; Registered Owners; Dimensions of Vessels in Length and Breadth and Depth of Hold; Tonnage (exclusive of Engine Room); and Gross Tonnage, distinguishing Vessels Built of Iron and Vessels having Screw Propellers; also, distinguishing Vessels measured under the Merchant Shipping Act of 1854 from those measured under previous Acts; and Estimated Horse Power of their Engines, and giving the Aggregate Number of Vessels and Amount of Tonnage; with an INDEX for easy reference attached to it, giving the Names of the Vessels in Alphabetical Order, with Numbers to each corresponding with the consecutive Numbers in the Return (in continuation of Parliamentary Paper, No. 422, of Session 1865).

Vessels marked thus * have been measured previous to the Merchant Shipping Act, 1854.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.	
1	-	*Beaver	London	1835	Hudson's Bay Company	Feet. 10 1/2 in.	Feet. 10 1/2 in.	Feet. 10 1/2 in.	109	-	70
2	267	*City of Hamburg	ditto	1836	General Steam Navigation Company	160 5	28 8	15 9	333	618	140
3	413	*John Bull	ditto	1835	- ditto	164 9	25 8	17 2	345	591	200
4	18	*Giraffe	ditto	1836	- ditto	142 0	22 6	14 6	232	410	120
5	180	*Rainbow	ditto	1837	- ditto	185 0	24 2	12 0	263	407	160
6	13,701	*Starlight	ditto	1838	Iron Steamboat Company	82 0	18 7	6 8	30	51	20
7	13,702	*Twilight	ditto	1838	- ditto	82 0	18 5	6 8	30	51	24
8	13,704	*Bridgroom	ditto	"	- ditto	98 5	13 6	6 9	35	55	24
9	-	*Queen Victoria	ditto	1839	Frederick Squire	83 6	10 9	6 2	35	52	-
10	367	*Sir Edward Banks	ditto	1837	General Steam Navigation Company	151 5	19 7	15 5	180	323	120
11	397	*Vivid	ditto	1841	- ditto	156 9	22 1	14 7	228	429	180
12	734	*Trident	ditto	1835	- ditto	192 7	28 7	19 4	645	971	280
13	30,719	*Hindustan	ditto	1842	Peninsular and Oriental Company	217 6	35 8	30 1	972	2,017	520
14	4,256	*Grey Mare Meg	ditto	"	G. Inglis and another	72 4	15 6	9 0	14	71	50
15	930	*Magician	ditto	"	General Steam Navigation Company	146 9	20 0	10 1	96	175	110
16	15,862	*Monarch	ditto	1843	William Watkins	64 10 in.	13 1 1/2 in.	7 0	26	-	20
17	9,167	*Samson	ditto	1844	Thames Steam Towing Company	84 0	15 9	9 1	34	88	60
18	30,711	*Precursor	ditto	1837	Peninsular and Oriental Company	229 0	38 5	24 4	1,133	1,817	460
19	4,274	*Robert Bruce	ditto	1841	H. Hindmarsh	95 8	18 4	9 4	49	130	80
20	6,199	*Victory	ditto	1840	Caledonian Steam Towing Company	82 2	16 1	9 0	28	86	60
21	6,168	*Souter Johnny	ditto	1836	W. T. Bridges and others	83 7	15 8	9 4	37	86	40
22	6,167	*Tam O'Shanter	ditto	1834	T. B. Jones	76 0	15 6 in.	9 0	40	-	35
23	6,198	*Sir William Wallace	ditto	1841	Caledonian Steam Towing Company	98 1	17 9	10 0	47	128	80
24	9,960	*Matrimony	ditto	1842	Iron Steamboat Company	98 1	13 4	6 4	37	55	24
25	280	*Triton	ditto	1845	General Steam Navigation Company	163 0	23 4	13 7	205	358	120
26	215	*William Jolliffe	ditto	1836	- ditto	143 7	20 2	13 9	197	311	100
27	10,631	*Samson	ditto	1843	James Matthews	83 5	16 3	9 0	31	90	40
28	4,307	*Lass o'Gowrie	ditto	1846	J. Jolliffe and another	71 2	15 1	8 6	23	67	40

29	250	*Water Witch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	—	
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.			
78	7,666	*Newhaven	London	1851	1847	William Geach	Feet. 10 1/2.	Feet. 10 1/2.	Feet. 10 1/2.	148	259	80	
79	4,377	*Sir Robert Hawks	ditto	"	1835	James Walter	153 0	21 2	11 0	44	—	40	
80	4,375	*Commodore	ditto	"	1840	Shipowners' Towing Company	76 4 1/2.	15 2 1/2.	8 6 1/2.	40	111	80	
81	14,792	*Severn	ditto	"	1851	— Farr	90 0	17 8	10 2	28	38	16	iron.
82	12,755	*John Lee	ditto	"	1844	William Watkins	85 1	10 8	5 2	35	104	120	
83	31,143	*Madras	ditto	1852	1844	Peninsular and Oriental Company	90 2	17 0	9 0	606	1,185	274	
84	—	*Wonder	ditto	"	1847	Nicola Vidovich	232 9	31 6	21 2	31	94	—	
85	25,120	*Nymph	ditto	"	1852	Woolwich Steam Packet Company	87 1	16 7	9 2	58	88	36	
86	4,282	*True Briton	ditto	"	"	Thomas Petley and others	123 6	14 5	6 9	41	95	120	
87	30,710	*Bombay	ditto	"	"	Peninsular and Oriental Company	79 0	16 0	9 4	608	1,186	274	iron, screw.
88	31,233	*Formosa	ditto	"	"	— ditto	234 0	31 4	21 2	451	677	154	iron, screw.
89	26	*Moselle	ditto	"	"	General Steam Navigation Company	208 6	25 3	16 7	349	616	160	iron.
90	14,895	*Bolton	ditto	"	1848	Jackson and Bean	198 5	25 5	14 6	19	55	25	
91	26,648	*Eversfield	ditto	"	1852	Henry Eversfield	68 4	14 0	8 2	35	51	30	screw.
92	—	*Mystery	ditto	"	"	R. D. Ross and another	60 5	17 3	6 7	43	106	—	
93	8,214	*Irene	ditto	"	"	Corporation of Trinity House	96 1	16 6	9 4	149	271	160	screw.
94	—	*Otter	ditto	"	"	Hudson's Bay Company	157 0	20 8	11 5	149	271	—	
95	9,068	*Paul Jones	ditto	"	"	Daniel Barker and others	122 0	20 3	12 2	145	214	—	
96	23,059	*Sylph	ditto	"	1849	Woolwich Steam Packet Company	79 8	15 6	9 3	22	80	38	
97	4,372	*Sir Walter Scott	ditto	"	1844	Caledonian Steam Towing Company	123 5	13 5	6 6	44	77	32	
98	30,709	*Bengal	ditto	1853	1853	Peninsular and Oriental Company	103 4	16 7	10 3	53	76	70	
99	357	*Countess of Lonsdale	ditto	"	1836	General Steam Navigation Company	295 0	38 2	25 4	1,176	2,185	464	iron, screw.
100	31,155	*Cadiz	ditto	"	1853	Peninsular and Oriental Company	174 0	24 7	17 4	396	616	200	
101	23,059	*Elfin	ditto	"	"	Woolwich Steam Packet Company	226 4	28 4	18 6	481	816	220	iron, screw.
102	183	*Hanover	ditto	"	1841	General Steam Navigation Company	148 2	13 9	7 9	51	90	40	
103	3	*Belgium	ditto	"	1850	— ditto	168 0	22 0	16 3	326	520	180	
104	9,069	*St. Michael	ditto	"	1838	Daniel Barker and another	161 8	26 3	14 3	249	393	180	
105	23,388	*Cornelia	ditto	"	1853	T. M. Weguelin and another	59 5	11 7	6 8	11	36	14	iron, screw.
106	16,379	*Dragon Fly	ditto	"	"	R. Brotherhood	144 6	19 4	13 7	215	289	60	iron, screw.
107	13,833	*Solent	ditto	"	"	Royal Mail Packet Company	55 2	11 5	7 5	19	32	8	
108	155	*Holland	ditto	"	"	General Steam Navigation Company	277 3	34 9	27 3	1,064	1,689	400	
109	18,604	*Monarch	ditto	"	1830	Electric Telegraph Company	165 3	26 0	13 6	241	383	180	
110	9,134	*Caroline	ditto	"	1853	Thomas Jackson and others	156 2	19 7	14 5	296	427	120	
111	31,152	*Norna	ditto	"	"	Peninsular and Oriental Company	141 0	26 2	14 8	361	480	80	iron, screw.
112	—	*Anita	ditto	"	"	Magdalena Steam Navigation Company	242 4	28 4	18 7	613	970	280	iron, screw.
113	26,489	*Jarrow	ditto	"	"	General Iron Screw Collier Company	129 6	18 6	6 2	62	113	80	iron.
114	17,303	*Princess Helena	ditto	"	1846	South Eastern Railway Company	164 0	26 4	15 2	414	531	70	iron, screw.
115	17,327	*Princess Maud	ditto	"	1844	— ditto	165 2	23 2	10 8	206	302	160	iron.
116	17,306	*Princess Clementine	ditto	"	1846	— ditto	140 5	19 8	10 2	91	187	120	iron.
							165 2	22 6	10 7	148	288	160	iron.

117	17,308	Lord Warden	-	-	ditto	-	-	-	-	-	168	0	28	3	11	0	197	307	160	iron.
118	18,220	H. W. Schneider	-	-	-	-	-	-	-	-	72	2	13	9	7	7	18	52	26	iron, screw.
119	40,655	Wye	-	-	-	-	-	-	-	-	202	2	27	9	21	1	488	751	180	iron, screw.
120	19,980	Magnet	-	-	-	-	-	-	-	-	32	7	8	4	4	6	4	10	12	iron, screw.
121	13,964	Golden Fleece	-	-	-	-	-	-	-	-	280	0	42	3	33	0	2,091	2,768	300	iron, screw.
122	26,524	*Tonning	-	-	-	-	-	-	-	-	224	4	27	4	19	1	735	987	200	iron.
123	4,279	Don	-	-	-	-	-	-	-	-	72	2	14	9	8	4	17	56	30	iron.
124	13,926	Atrato	-	-	-	-	-	-	-	-	336	6	40	9	33	6	1,970	3,126	750	iron.
125	23,249	*Caledonia	-	-	-	-	-	-	-	-	84	2	15	8	9	2	42	95	---	iron.
126	12,764	*Victoria	-	-	-	-	-	-	-	-	116	0	17	1	10	8	51	147	180	iron.
127	20,326	*Bishop	-	-	-	-	-	-	-	-	69	0	14	0	8	6	27	66	30	iron.
128	23,050	*Waterman (No. 2)	-	-	-	-	-	-	-	-	118	3	14	2	7	1	62	85	36	iron.
129	23,052	*Waterman (No. 4)	-	-	-	-	-	-	-	-	115	5	13	7	7	0	54	77	32	iron.
130	23,054	*Sea Swallow	-	-	-	-	-	-	-	-	153	7	15	6	7	0	96	128	60	iron.
131	23,051	*Waterman (No. 3)	-	-	-	-	-	-	-	-	114	5	13	6	6	6	53	76	32	iron.
132	609	*Pioneer	-	-	-	-	-	-	-	-	169	5	24	2	15	6	392	413	70	iron, screw.
133	13,952	*Simla	-	-	-	-	-	-	-	-	330	4	37	9	27	0	1,178	2,441	640	iron, screw.
134	5,146	*Ross D. Mangles	-	-	-	-	-	-	-	-	156	6	26	5	14	4	430	531	75	iron, screw.
135	25,113	Tamar	-	-	-	-	-	-	-	-	287	5	33	7	26	5	1,076	1,707	400	iron, screw.
136	23,068	Oread	-	-	-	-	-	-	-	-	151	5	14	9	7	2	71	103	50	iron.
137	9,166	*Lion	-	-	-	-	-	-	-	-	69	5	14	9	8	2	13	58	35	iron, screw.
138	25,118	*Nubia	-	-	-	-	-	-	-	-	289	3	38	0	27	4	1,033	2,096	450	iron, screw.
139	25	*Dragon	-	-	-	-	-	-	-	-	162	5	26	5	15	5	382	475	70	iron.
140	9,086	*Rhenus	-	-	-	-	-	-	-	-	189	0	22	4	9	0	104	335	200	iron, screw.
141	30,031	*Firefly	-	-	-	-	-	-	-	-	157	2	25	7	14	1	404	500	80	iron, screw.
142	355	Pilot	-	-	-	-	-	-	-	-	180	8	26	9	14	7	319	449	80	iron, screw.
143	6,170	*Caledonia	-	-	-	-	-	-	-	-	102	0	16	4	10	7	48	124	70	iron, screw.
144	25,152	Parana	-	-	-	-	-	-	-	-	300	0	36	8	33	1	1,720	2,730	800	iron, screw.
145	12,781	*Contractor	-	-	-	-	-	-	-	-	74	0	15	1	8	7	29	74	25	iron, screw.
146	285	*Gibraltar	-	-	-	-	-	-	-	-	208	5	26	5	22	8	669	995	120	iron.
147	13,971	Tyne	-	-	-	-	-	-	-	-	296	6	36	2	27	1	1,207	1,916	400	iron, screw.
148	191	*Retriever	-	-	-	-	-	-	-	-	155	4	21	3	12	7	245	322	50	iron, screw.
149	31,753	*Burra Burra	-	-	-	-	-	-	-	-	150	8	23	3	11	9	196	321	80	iron, screw.
150	26,251	*Chester	-	-	-	-	-	-	-	-	159	4	26	6	14	5	441	568	70	iron, screw.
151	4,264	*Imperial	-	-	-	-	-	-	-	-	152	0	27	0	14	9	386	482	80	iron, screw.
152	7,354	Wearmouth	-	-	-	-	-	-	-	-	167	0	26	8	15	8	331	487	140	iron, screw.
153	21,176	*Waterman (No. 10)	-	-	-	-	-	-	-	-	122	6	13	6	6	9	64	87	32	iron.
154	13,990	*Sultan	-	-	-	-	-	-	-	-	231	0	32	0	17	8	808	1,125	200	iron, screw.
155	78	*Lady Berriedale	-	-	-	-	-	-	-	-	122	5	27	0	15	0	262	393	70	iron, screw.
156	23,106	Waterman (No. 1)	-	-	-	-	-	-	-	-	107	0	13	9	7	1	50	80	32	iron.
157	23,108	Waterman (No. 7)	-	-	-	-	-	-	-	-	109	0	13	3	6	6	50	79	32	iron.
158	23,111	Waterman (No. 12)	-	-	-	-	-	-	-	-	118	0	14	4	7	1	57	90	32	iron.
159	23,368	Robert Burns	-	-	-	-	-	-	-	-	75	9	17	0	8	7	22	82	40	iron, screw.
160	24,519	Black Diamond	-	-	-	-	-	-	-	-	179	3	28	2	16	4	400	588	70	iron, screw.
161	24,691	Aid	-	-	-	-	-	-	-	-	89	2	18	0	9	9	16	112	50	iron.
162	24,885	Sir Walter Raleigh	-	-	-	-	-	-	-	-	128	9	20	0	8	1	180	180	50	iron.
163	26,428	London Pride	-	-	-	-	-	-	-	-	101	1	13	7	5	6	45	72	48	iron.
164	26,429	Sunflower	-	-	-	-	-	-	-	-	100	0	13	0	6	5	44	70	24	iron.
165	4,634	Pera	-	-	-	-	-	-	-	-	303	5	42	1	27	1	1,261	2,014	450	iron, screw.

Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—*continued.*

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	—
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
166	4,693	Sardinian	London	1856	1855	Hugh Taylor and others	Feet. 10/10.	Feet. 10/10.	Feet. 10/10.			iron, screw.
167	26,901	Hutton Chaytor	ditto	"	"	General Iron Screw Collier Company	169 5	26 4	15 9	420	70	iron, screw.
168	6,181	Berwick	ditto	"	"	G. Elliott	170 0	26 0	15 0	424	70	iron, screw.
169	6,148	Susannah	ditto	"	1852	"	183 3	27 1	15 9	365	80	iron, screw.
170	4,356	Dolphin	ditto	"	1855	"	55 4	12 8	6 4	21	32	iron.
171	12,765	Vulture	ditto	"	1855	"	197 0	28 2	16 3	394	100	iron, screw.
172	12,779	Citizen (N.)	ditto	"	1847	"	176 8	27 5	16 7	345	75	iron, screw.
173	12,780	Citizen (O.)	ditto	"	1847	"	101 0	11 9	6 3	44	62	iron.
174	13,972	Leo	ditto	"	1855	"	88 5	12 7	6 2	36	57	iron.
175	18,687	Charm	ditto	"	1847	"	206 2	25 4	11 5	359	220	iron.
176	18,748	Britannia	ditto	"	1855	"	84 9	16 6	8 8	58	50	iron.
177	13,763	Victoria Dock	ditto	"	1856	"	91 4	18 4	10 3	42	60	iron, screw.
178	14,741	Jackall	ditto	"	"	"	195 0	28 4	22 0	623	130	iron, screw.
179	15,071	Eagle	ditto	"	"	"	103 5	18 8	10 4	61	119	iron.
180	23,427	Citizen (M.)	ditto	"	1853	"	54 6	11 1	5 8	7	22	iron, screw.
181	26,445	Undine	ditto	"	1847	"	200 0	24 1	11 3	205	130	iron.
182	16,357	Insolent	ditto	"	1856	"	105 0	13 5	6 5	55	75	iron.
183	16,394	Aden	ditto	"	"	"	123 1	25 0	11 1	106	178	iron, screw.
184	16,379	Defiance	ditto	"	"	"	106 5	23 1	7 5	115	174	screw.
185	16,954	Germania	ditto	"	"	"	225 6	29 5	18 0	507	210	iron, screw.
186	16,958	Azof	ditto	"	"	"	81 0	17 7	9 0	37	83	iron.
187	5,709	Blue Bell	ditto	"	1855	"	208 1	28 8	16 4	429	100	iron, screw.
188	17,498	Lotus	ditto	"	1844	"	214 1	27 6	13 6	476	180	iron, screw.
189	17,499	Water Sprite	ditto	"	1856	"	96 5	13 3	6 0	41	66	iron.
190	17,548	George Robert	ditto	"	1845	"	105 2	14 2	6 4	41	65	iron.
191	17,558	Baltic	ditto	"	1856	"	90 2	12 1	6 5	13	24	iron.
192	5,462	Ethiope	ditto	"	1854	"	90 8	16 8	8 3	35	40	iron, screw.
193	23,176	Express	ditto	"	"	"	185 2	26 4	14 4	338	100	iron, screw.
194	17,086	Wonder	ditto	"	1856	"	211 6	25 7	20 3	469	160	iron, screw.
195	10,160	Challenge	ditto	"	"	"	88 9	18 6	10 1	38	50	iron.
196	11,396	Demetrius	ditto	"	1857	"	87 5	17 1	8 7	23	36	iron.
197	12,887	Victoria	ditto	"	"	"	84 6	16 6	8 9	25	40	iron.
198	12,587	River Queen	ditto	"	"	"	185 6	26 1	14 6	418	527	iron, screw.
199	11,922	Argus	ditto	"	"	"	92 3	16 1	7 0	59	86	iron, screw.
200	12,589	Bruiser	ditto	"	"	"	112 1	13 9	6 3	44	71	iron.
201	18,289	Energy	ditto	"	1854	"	172 6	23 9	13 3	208	160	iron.
202	16,353	Leipzig	ditto	"	1856	"	189 4	25 5	14 7	344	80	iron, screw.
203	18,922		ditto	"	1857	"	95 7	19 4	10 5	30	60	iron.
			ditto	"		"	179 5	26 4	16 3	452	70	iron.

No.	Name	Age	Sex	Rank	Service	Pay	Grants	Remarks
204	Solva	15,595	-	-	-	-	-	ditto
205	Alar	518	-	-	-	-	-	ditto
206	Candia	674	-	-	-	-	-	ditto
207	William Cory	18,730	-	-	-	-	-	ditto
208	Black Boy	19,598	-	-	-	-	-	ditto
209	Prince Frederick William	19,600	-	-	-	-	-	ditto
210	Propeller	1,977	-	-	-	-	-	ditto
211	Napoleon	19,865	-	-	-	-	-	ditto
212	Times	19,887	-	-	-	-	-	ditto
213	Granada	20,187	-	-	-	-	-	ditto
214	Airedale	20,476	-	-	-	-	-	ditto
215	Nemesis	23,478	-	-	-	-	-	ditto
216	Artel	20,067	-	-	-	-	-	ditto
217	Wellington	20,586	-	-	-	-	-	ditto
218	Dahlia	26,427	-	-	-	-	-	ditto
219	Euclid	2,089	-	-	-	-	-	ditto
220	Alliance	16,150	-	-	-	-	-	ditto
221	Powerful	21,166	-	-	-	-	-	ditto
222	Bulldog	19,872	-	-	-	-	-	ditto
223	Ella Constance	21,173	-	-	-	-	-	ditto
224	Benares	21,175	-	-	-	-	-	ditto
225	Racer	21,393	-	-	-	-	-	ditto
226	Plover	21,394	-	-	-	-	-	ditto
227	Wansbeck	16,788	-	-	-	-	-	ditto
228	Athenian	16,872	-	-	-	-	-	ditto
229	Salsette	21,578	-	-	-	-	-	ditto
230	Camellia	21,581	-	-	-	-	-	ditto
231	Lucy	21,583	-	-	-	-	-	ditto
232	Queen Esther	21,586	-	-	-	-	-	ditto
233	Nelson	21,589	-	-	-	-	-	ditto
234	Prince Alfred	21,591	-	-	-	-	-	ditto
235	Northam	21,595	-	-	-	-	-	ditto
236	Jupiter	21,597	-	-	-	-	-	ditto
237	Sir William Peel	21,600	-	-	-	-	-	ditto
238	Mazagon	21,890	-	-	-	-	-	ditto
239	Rainbow	21,894	-	-	-	-	-	ditto
240	Tasmanian	21,898	-	-	-	-	-	ditto
241	Connector	22,104	-	-	-	-	-	ditto
242	Onetida	7,416	-	-	-	-	-	ditto
243	Malta	22,171	-	-	-	-	-	ditto
244	Ceylon	22,173	-	-	-	-	-	ditto
245	Labouchere	22,174	-	-	-	-	-	ditto
246	Bobolina	26,163	-	-	-	-	-	ditto
247	Christina	18,192	-	-	-	-	-	ditto
248	Cologne	26,171	-	-	-	-	-	ditto
249	Pioneer	26,897	-	-	-	-	-	ditto
250	Behar	26,995	-	-	-	-	-	ditto
251	Orissa	26,996	-	-	-	-	-	ditto

Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
252	12,756	Punch	London	1859	1854	101 7	18 1	Feet. 10/4s.	31	115	60	iron.
253	27,350	Napaul	ditto	"	1856	244 0	29 7	18 0	641	796	200	iron, screw.
254	9,490	Eider	ditto	"	1856	123 2	20 3	9 8	123	181	40	iron, screw.
255	27,194	Cockerell	ditto	"	1859	59 8	12 2	5 6	19	28	12	iron, screw.
256	27,200	Ellora	ditto	"	1855	261 2	36 2	26 8	1,093	1,607	350	iron, screw.
257	27,207	Jeddo	ditto	"	1859	277 3	35 8	16 2	1,110	1,632	450	iron, screw.
258	27,211	Conservator	ditto	"	1858	112 2	14 1	6 5	37	59	24	iron.
259	27,214	St. Michael	ditto	"	1859	63 2	13 4	6 9	6	32	18	
260	27,216	Enterprise	ditto	"	"	114 8	19 2	9 9	55	147	70	iron.
261	27,224	Mersey	ditto	"	"	260 4	30 2	16 5	730	1,061	250	iron.
262	27,225	Doris	ditto	"	"	130 4	15 7	6 6	49	78	40	
263	27,228	Pilot	ditto	"	1858	85 4	10 2	8 5	18	71	30	
264	25,668	Emen	ditto	"	1854	266 3	36 0	19 3	908	1,538	300	iron, screw.
265	9,965	Robert Lowe	ditto	"	"	247 0	35 2	18 7	1,273	1,475	80	iron, screw.
266	27,289	Long Ditton	ditto	"	1859	54 6	11 0	6 1	14	20	20	screw.
267	984	Samuel Laing	ditto	"	1854	190 2	26 8	15 6	472	606	70	iron, screw.
268	22,037	Uncle Sam	ditto	"	1849	107 0	20 3	10 9	77	159	80	
269	22,036	John Bull	ditto	"	"	96 0	18 2	9 7	50	115	60	
270	20,546	Victor	ditto	"	1857	186 3	20 2	11 8	78	219	100	iron.
271	3,570	Champion	ditto	"	1854	149 2	23 0	12 4	196	289	70	screw.
272	27,781	Nelly	ditto	"	1859	91 8	18 2	9 6	39	116	55	
273	27,784	Shannon	ditto	"	"	330 4	44 5	26 2	2,187	3,472	800	iron.
274	27,906	Modern Greece	ditto	"	"	224 0	29 3	17 0	612	754	120	iron, screw.
275	27,174	Cosmopolitan	ditto	"	1852	192 6	27 3	15 7	303	502	140	iron, screw.
276	4,687	Metropolitan	ditto	"	1853	196 8	27 6	16 3	308	521	140	iron, screw.
277	27,916	Delta	ditto	"	1859	324 3	35 3	22 1	1,020	1,618	400	iron.
278	27,917	Cadiz	ditto	"	1856	196 7	30 1	18 2	602	761	90	iron, screw.
279	28,062	Alarm	ditto	"	1859	83 3	18 0	9 5	11	81	50	
280	27,199	China	ditto	"	1855	279 0	36 4	22 9	1,367	2,010	400	iron, screw.
281	20,840	Little Eastern	ditto	"	1858	62 7	11 5	6 0	12	26	10	iron, screw.
282	7,459	Columbian	ditto	"	1855	307 4	38 4	25 7	1,436	2,112	520	iron, screw.
283	28,084	Assam Nautilus	ditto	"	1859	85 6	12 8	6 4	34	54	20	iron.
284	28,098	Fairy	ditto	1860	"	125 6	15 2	6 6	47	74	32	
285	28,352	Prince	ditto	"	"	90 3	18 5	9 0	37	89	52	
286	28,354	John Penn	ditto	"	"	183 2	19 9	10 5	97	203	150	iron.
287	28,366	Alacrity	ditto	"	"	54 1	9 8	6 7	11	17	16	iron, screw.
288	24,638	Peninsula	ditto	"	1853	193 0	25 2	14 5	350	514	80	iron, screw.
289	17,309	Princess Mary	ditto	"	1844	148 0	20 7	9 8	109	174	120	iron.
290	26,375	Boreas	ditto	"	1856	174 5	24 3	13 6	280	412	80	iron, screw.

Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
334	17,305	Prince Ernest	London	1861	South Eastern Railway Company	Feet. 104.	Feet. 10 1/2.	Feet. 10 1/2.	172	272	150	iron.
335	20,125	Riflemen	ditto	"	Robert Green and another	106 2	18 8	6 5	43	61	24	
336	25,121	Queen of the South	ditto	"	Captain R. W. Pelly, &c., and another	250 4	39 3	24 7	1,433	2,090	300	iron, screw.
337	43,926	Kent	ditto	"	Charles Brownfield	78 4	17 5	9 1	18	71	35	
338	43,929	Haswell	ditto	"	Hugh Taylor and others	196 0	29 0	16 8	560	706	90	iron, screw.
339	43,930	Victoria	ditto	"	South Eastern Railway Company	208 5	24 0	11 5	217	358	220	iron.
340	43,933	Sir James Duke	ditto	"	John Fenwick and others	197 8	28 0	17 4	570	744	90	iron, screw.
341	43,984	Tom John Taylor	ditto	"	" ditto	197 7	28 0	16 2	602	748	90	iron, screw.
342	43,945	Hawthorns	ditto	"	R. Cory and others	199 0	28 0	17 4	575	743	90	iron, screw.
343	43,952	Midge	ditto	"	Thames Steam Tug Company	60 0	12 6	6 8	9	27	25	iron, screw.
344	43,953	Thames	ditto	"	James Anderson	181 7	24 4	13 5	238	291	40	screw.
345	20,192	England	ditto	1847	J. R. Yglesias	278 9	38 2	20 4	1,336	1,909	300	iron, screw.
346	43,965	Hellenis	ditto	1861	Anglo-Ionian Steam Navigation Company	206 1	28 5	17 3	608	755	80	iron, screw.
347	46,971	Falcon	ditto	"	J. H. Gordon	202 2	28 1	16 2	569	676	80	iron, screw.
348	43,974	Stettin	ditto	"	Z. C. Pearson	169 5	27 2	15 5	360	480	90	iron, screw.
349	43,975	John Fenwick	ditto	"	Richard Cory and others	199 0	28 0	17 4	575	743	90	iron, screw.
350	23,243	Eagle	ditto	"	William Wagstaff	187 8	28 0	15 0	447	548	60	iron, screw.
351	8,013	Waterloo	ditto	1855	General Steam Navigation Company	230 1	29 8	12 7	324	514	240	iron.
352	26,668	Pacific	ditto	1854	Henry Lafone	254 3	32 6	23 6	932	1,480	500	iron.
353	29,762	Adriatic	ditto	"	Atlantic Royal Mail Steam Navigation Company.	345 9	50 0	24 1	1,737	3,670	1,400	
354	43,982	Annette	ditto	1861	Henry Holmes	201 7	30 0	18 1	558	752	100	iron, screw.
355	43,984	Brunette	ditto	"	General Iron Screw Collier Company	178 4	28 0	16 3	481	618	80	iron, screw.
356	26,661	Vestal	ditto	"	Corporation of Trinity House	182 0	23 5	18 3	207	342	180	iron.
357	19,738	Rouen	ditto	1862	Richard Cory and others	204 4	30 2	14 7	490	720	80	iron, screw.
358	22,061	Sir Walter Raleigh	ditto	"	General Steam Navigation Company	168 5	20 6	10 4	150	239	100	iron.
359	44,010	Titan	ditto	"	China and Japan Coast and River Steam Navigation Company.	120 8	19 5	9 9	90	156	70	iron.
360	25,125	Ripon	ditto	"	Peninular and Oriental Company	276 8	35 1	21 1	1,393	1,908	450	iron.
361	44,006	Maecregor Laird	ditto	"	African Steam Ship Company	249 7	30 8	19 2	689	969	200	iron, screw.
362	26,216	Mauritius	ditto	"	East India and London Shipping Company	261 0	39 0	25 7	1,452	2,185	300	iron.
363	44,827	Volga	ditto	"	C. M. Norwood and others	19 4	28 7	14 8	578	694	80	iron, screw.
364	44,829	Martin	ditto	"	Waterman's Steam Packet Company	116 8	14 2	6 9	41	65	32	iron.
365	44,831	Rona	ditto	"	Robert Jardine	235 0	33 2	21 3	784	1,215	300	iron.
366	16,971	Argus	ditto	"	George Shaw	130 4	20 9	13 6	161	256	120	screw.
367	44,835	Dwina	ditto	"	C. M. Norwood and others	194 4	28 7	14 8	578	695	80	iron, screw.
368	44,837	Naïad	ditto	"	Woolwich Steam Packet Company	130 3	14 5	6 4	55	77	36	
369	44,843	Samphire	ditto	"	London, Chatham, and Dover Railway Company.	191 7	24 8	11 9	183	330	160	iron.

No.	Name	Rank	Age	Service	Pay	Grants	Notes
370	Maid of Kent	ditto	-	-	44,842	-	
371	Velocity	ditto	-	-	19,457	-	
372	Vigilant	ditto	-	-	19,460	-	
373	George Peabody	ditto	-	-	44,855	-	
374	Childe Harold	ditto	-	-	44,856	-	
375	Warrior	ditto	-	-	44,857	-	
376	Plack Prince	ditto	-	-	44,858	-	
377	Claud Hamilton	ditto	-	-	44,859	-	
378	Sunbeam	ditto	-	-	44,867	-	
379	Chanticleer	ditto	-	-	3,621	-	
380	Azalea	ditto	-	-	44,987	-	
381	Tynemouth	ditto	-	-	22,247	-	
382	Congress	ditto	-	-	44,868	-	
383	Queen of the Belgians	ditto	-	-	16,709	-	
384	Queen	ditto	-	-	44,988	-	
385	Arrow	ditto	-	-	28,652	-	
386	Vittorio	ditto	-	-	44,992	-	
387	Resolute	ditto	-	-	27,705	-	
388	London	ditto	-	-	45,007	-	
389	Scud	ditto	-	-	45,011	-	
390	Petrel	ditto	-	-	45,012	-	
391	Coreys	ditto	-	-	45,019	-	
392	Albert Edward	ditto	-	-	45,021	-	
393	Experiment	ditto	-	-	29,075	-	
394	Amazon	ditto	-	-	25,174	-	
395	Elgin	ditto	-	-	45,028	-	
396	Czar	ditto	-	-	27,551	-	
397	Oracle	ditto	-	-	11,059	-	
398	Arno	ditto	-	-	24,210	-	
399	Neptune	ditto	-	-	45,001	-	
400	Admiral Kanaris	ditto	-	-	21,868	-	
401	Fusi Yama	ditto	-	-	45,069	-	
402	Sydney Hall	ditto	-	-	26,377	-	
403	Alice	ditto	-	-	13,620	-	
404	Flora	ditto	-	-	45,074	-	
405	Newsy	ditto	-	-	29,378	-	
406	Clan Alpine	ditto	-	-	45,754	-	
407	Secret	ditto	-	-	16,870	-	
408	Hamburg	ditto	-	-	10,287	-	
409	Haulier	ditto	-	-	45,772	-	
410	Tugwell	ditto	-	-	45,773	-	
411	Fokien	ditto	-	-	45,781	-	
412	Celocotronis	ditto	-	-	26,852	-	
413	Poonah	ditto	-	-	45,786	-	
414	Saxon	ditto	-	-	504	-	
415	Sir Harry Parkes	ditto	-	-	45,793	-	
416	Warrior	ditto	-	-	45,799	-	

Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	—
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
417	47,298	Carnatio -	London - 1863	1862	Peninsular and Oriental Company	Feet. 10 1/2.	Feet. 10 1/2.	Feet. 10 1/2.	1,254	1,776	400	iron, screw.
418	47,303	Kate -	ditto -	1863	E. J. Lomnitz -	294 7	38 1	17 6	845	465	120	iron, screw.
419	47,310	Auckland -	ditto -	"	Intercolonial Steam Packet Company	212 8	28 0	16 3	533	699	150	iron, screw.
420	6,837	Earl of Aberdeen -	ditto -	1847	General Steam Navigation Company	215 3	28 1	18 3	611	820	380	iron.
421	47,316	Venus -	ditto -	1863	F. Muir -	239 5	26 1	10 8	866	530	240	iron.
422	47,339	Hebe -	ditto -	"	- ditto -	176 5	22 5	12 3	340	449	120	iron.
423	47,340	Seine and Tamise, No. 2	ditto -	1862	J. H. Baxendale -	129 7	25 9	9 6	213	277	40	iron, screw.
424	43,650	Robert Scott -	ditto -	1863	E. T. Hankey -	83 2	16 7	9 0	23	75	32	
425	47,351	Renown -	ditto -	"	M. Martin and others -	118 0	19 2	9 9	91	163	100	iron.
426	47,356	Prince -	ditto -	"	S. Williams -	55 0	12 0	6 5	8	26	25	iron, screw.
427	47,359	City of London -	ditto -	"	C. C. Nelson and others -	114 5	19 1	10 2	66	143	140	iron.
428	47,370	James Joicey -	ditto -	"	J. Joicey and others -	200 6	28 1	16 8	536	695	90	iron, screw.
429	47,372	Janet Tennant -	ditto -	"	W. E. Cooke and another -	174 5	22 5	7 2	144	206	75	iron.
430	47,374	Yeddo -	ditto -	"	W. R. Adamson and another -	171 7	24 7	12 2	294	370	85	iron, screw.
431	47,376	Rangoon -	ditto -	"	Peninsular and Oriental Company	294 9	38 1	17 6	1,253	1,776	400	iron, screw.
432	47,379	Sea Hawk -	ditto -	1839	J. Roberts -	176 4	33 1	16 4	316	656	320	iron, screw.
433	28,362	Saxonia -	ditto -	1856	J. L. Hadley and others -	162 4	24 3	13 1	243	358	80	iron, screw.
434	15,690	Prince Albert -	ditto -	1842	S. H. Bezland -	154 4	19 6	9 2	116	171	21	iron, screw.
435	47,384	Shooey Leen -	ditto -	1863	George Dunoon and another -	216 0	27 8	16 4	493	659	160	iron, screw.
436	47,391	Mona -	ditto -	"	China and Japan Steam Navigation Company	188 7	28 3	17 3	542	693	100	iron, screw.
437	43,634	Childe Harold -	ditto -	1862	G. Furness -	73 2	14 4	7 7	16	45	30	iron, screw.
438	27,778	Ida -	ditto -	1858	London, Brighton, and South Coast Railway Company.	137 7	20 2	-	171	221	50	iron, screw.
439	45,009	La Plata -	ditto -	1862	A. G. Robinson -	249 6	30 5	21 9	1,006	1,195	150	iron, screw.
440	47,401	Typhoon -	ditto -	1839	G. W. Bremner and another -	166 3	32 4	19 8	316	659	240	iron.
441	47,404	Annette -	ditto -	1868	W. Watkins -	108 0	18 0	10 3	44	118	60	iron.
442	19,362	Scotia -	ditto -	1857	G. B. Carr and another -	241 2	32 4	20 6	1,021	1,196	120	iron, screw.
443	47,408	Ladoga -	ditto -	1863	C. M. Norwood and others -	196 0	29 0	13 5	636	744	80	iron, screw.
444	47,411	Alexandra -	ditto -	"	London, Italian, and Adriatic Steam Navigation Company.	225 8	30 2	18 0	618	813	150	iron, screw.
445	20,778	Asia -	ditto -	1858	G. B. Carr and another -	226 0	32 9	20 2	923	1,093	120	iron, screw.
446	27,658	Fideliter -	ditto -	1859	Vancouver Coal Mining Company -	121 0	18 4	8 5	96	142	40	iron, screw.
447	47,420	Breeze -	ditto -	1863	London, Chatham, and Dover Railway Company.	190 6	25 2	11 5	195	340	160	iron.
448	47,427	John McIntyre -	ditto -	"	R. Cory and others -	226 0	32 0	16 9	798	985	198	iron, screw.
449	47,437	George Elliot -	ditto -	"	G. Elliot and another -	200 4	28 9	16 6	549	692	110	iron, screw.
450	28,106	Kelpie -	ditto -	1860	Peninsular and Oriental Company -	70 6	10 2	6 0	7	24	9	iron, screw.
451	46,510	Clotilda -	ditto -	1863	London, Italian, and Adriatic Steam Navigation Company.	214 1	28 0	16 4	533	707	150	iron, screw.

452	23,272	Powerful -	-	-	ditto	-	-	-	1855	J. H. Dickinson -	-	-	-	-	188	0	27	7	16	5	633	932	120	iron, screw.
453	48,514	Wokee -	-	-	ditto	-	-	-	1863	G. Duncan and another	-	-	-	-	186	5	26	0	14	7	412	526	80	iron, screw.
454	48,515	Yow Yangs	-	-	ditto	-	-	-	1856	A. G. Robinson and others	-	-	-	-	185	2	27	9	15	0	474	583	90	iron, screw.
455	17,690	Forth -	-	-	ditto	-	-	-	1855	General Steam Navigation Company	-	-	-	-	178	0	24	3	13	9	311	401	80	iron, screw.
456	48,520	Wave -	-	-	ditto	-	-	-	1863	London, Chatham, and Dover Railway Com- pany.	-	-	-	-	190	4	24	7	11	5	195	340	160	iron.
457	48,521	Foam -	-	-	ditto	-	-	-	1862	Frederic Subel -	-	-	-	-	225	0	26	7	13	8	293	497	240	iron.
458	48,519	Ellen Sinclair	-	-	ditto	-	-	-	1863	J. O. Phillips and others	-	-	-	-	189	1	27	5	16	3	505	632	90	iron, screw.
459	48,525	Ceres -	-	-	ditto	-	-	-	1863	F. Muir -	-	-	-	-	175	4	23	5	12	4	270	375	120	iron, screw.
460	48,543	Otago -	-	-	ditto	-	-	-	"	Intercolonial Steam Packet Company	-	-	-	-	236	0	26	8	15	6	457	645	150	iron, screw.
461	48,551	John Liddell	-	-	ditto	-	-	-	"	J. Liddell and others	-	-	-	-	196	9	28	0	16	9	562	699	90	iron, screw.
462	22,542	Midge -	-	-	ditto	-	-	-	1858	Quebrada Land, Railway, and Mining Company	-	-	-	-	97	2	18	0	9	4	56	98	24	screw.
463	48,556	Fanny Lambert	-	-	ditto	-	-	-	1863	R. Cory and others	-	-	-	-	201	0	28	1	16	8	537	699	90	iron, screw.
464	48,559	Aziz -	-	-	ditto	-	-	-	"	S. O. Fitzprios	-	-	-	-	171	8	24	7	12	2	320	403	80	iron, screw.
465	11,872	Orwell -	-	-	ditto	-	-	-	1839	George Fleming -	-	-	-	-	148	6	22	2	9	5	103	192	80	iron.
466	48,563	Alexandra	-	-	ditto	-	-	-	1863	London and North Western Railway Company	-	-	-	-	226	0	23	3	16	0	546	772	320	iron.
467	48,566	Index -	-	-	ditto	-	-	-	"	E. P. Stringer and another	-	-	-	-	208	8	25	7	11	5	362	469	160	iron.
468	48,567	Lady Elgin	-	-	ditto	-	-	-	1847	G. H. Harrington and another	-	-	-	-	145	0	23	2	14	3	197	323	160	iron.
469	48,568	Syria -	-	-	ditto	-	-	-	1863	Peninsular and Oriental Company	-	-	-	-	312	5	36	0	18	5	1,420	1,932	450	iron.
470	48,575	Golconda	-	-	ditto	-	-	-	"	- ditto	-	-	-	-	314	5	38	3	18	7	1,253	1,909	400	iron, screw.
471	48,580	Alexandra	-	-	ditto	-	-	-	"	M. Martin and others	-	-	-	-	94	2	17	6	9	8	60	124	50	iron.
472	48,600	Blonde -	-	-	ditto	-	-	-	"	General Iron Screw Collier Company	-	-	-	-	177	2	28	4	15	3	497	610	80	iron, screw.
473	48,646	Tim Sin -	-	-	ditto	-	-	-	"	G. Barnett and another	-	-	-	-	241	3	26	0	12	8	611	774	140	iron.
474	9,531	Rose -	-	-	ditto	-	-	-	1851	D. Macgregor -	-	-	-	-	125	3	18	4	0	3	68	129	70	iron.
475	48,648	Minnie -	-	-	ditto	-	-	-	1863	W. Boyle -	-	-	-	-	1									

Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	—
					Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
					Feet. 10ths.	Feet. 10ths.	Feet. 10ths.				
498	Teen Chang	London	1864	China and Japan Steam Navigation Company	131 5	22 1	10 3	130	182	90	iron.
499	Douro	ditto	"	Daniel Barker and others	95 8	18 7	9 8	40	102	56	iron, screw.
500	Eothen	ditto	"	Arthur Anderson	162 0	22 2	12 2	123	191	70	iron, screw.
501	Annie	ditto	"	F. G. Westmoreland and another	188 2	24 0	12 8	330	430	110	iron, screw.
502	Jorawur	ditto	"	John Fleming	124 0	19 7	10 6	101	184	100	iron.
503	Garland	ditto	"	R. J. Brown	20 2	21 8	9 6	225	302	120	iron.
504	Conqueror	ditto	"	E. T. Hankey	111 6	18 6	9 6	37	118	65	iron.
505	Interloper	ditto	"	Robert Thurburn	163 0	24 8	14 9	191	205	200	iron.
506	Atalanta	ditto	"	George Sutherland	202 7	23 6	12 5	253	380	200	iron, screw.
507	Thomas Lea	ditto	"	Richard Cory and others	179 7	28 1	17 2	487	680	80	iron, screw.
508	Antagonist	ditto	"	William Watkins and another	91 6	17 0	8 8	36	54	50	iron.
509	Dumbarton	ditto	"	T. A. Gibb	250 0	35 5	22 0	944	1,462	300	iron.
510	Ahuriri	ditto	"	J. W. McLaren	127 1	20 1	9 6	131	184	60	iron, screw.
511	Great Eastern	ditto	"	Great Eastern Steam Ship Company (Limited)	679 6	82 8	31 6	13,344	18,915	2,660	iron, screw & paddle.
512	Johore	ditto	"	W. W. Ker	110 0	19 0	7 2	75	115	60	iron.
513	Hawk	ditto	"	Telegraph Construction and Maintenance Company (Limited).	241 8	28 1	15 2	552	733	150	iron.
514	Vulcan	ditto	"	China and Japan Navigation Company	131 5	22 1	10 2	130	198	90	iron.
515	Pioneer	ditto	"	F. H. Trevithick	83 5	14 8	6 1	39	62	30	iron, screw.
516	Vigilant	ditto	"	E. F. Bird	160 7	22 1	11 5	183	273	60	iron, screw.
517	Rambler	ditto	"	D. S. Mitchell	100 0	18 0	9 4	80	109	56	iron.
518	Calabar	ditto	"	African Steam Ship Company (Limited)	260 5	31 4	19 2	816	1,122	250	iron, screw.
519	Virgin	ditto	"	European Trading Company (Limited)	220 2	24 2	10 9	291	423	180	iron.
520	J. R. Hinde	ditto	"	Richard Cory and others	198 7	28 0	17 4	674	740	90	iron, screw.
521	Kafraria	ditto	"	Diamond Steam Navigation Company (Limited).	200 2	28 0	16 2	624	779	120	iron, screw.
522	Redgauntlet	ditto	"	William Boyle	201 4	21 1	9 6	173	266	120	iron.
523	Omega	ditto	"	C. M. Norwood and others	203 0	30 6	14 4	673	856	80	iron, screw.
524	Stella	ditto	"	E. W. Edwards	117 9	17 8	9 3	70	110	50	iron, screw.
525	Thames	ditto	"	British Colonial Steam Ship Company (Limited).	254 7	32 3	24 7	1,090	1,377	170	iron, screw.
526	Latona	ditto	"	Indian Steam Navigation Company (Limited)	212 0	28 2	16 9	534	699	99	iron, screw.
527	Europa	ditto	"	London Steam Navigation Company (Limited)	236 5	26 1	17 2	498	666	90	iron, screw.
528	Glengyle	ditto	"	Robert Jardine	197 3	38 3	14 8	1,265	1,933	400	iron.
529	May Queen	ditto	"	General Iron Screw Collier Company (Limited)	177 0	28 2	15 5	478	506	80	iron, screw.
530	Medora	ditto	"	London Steam Navigation Company (Limited)	201 3	28 0	17 4	588	769	90	iron, screw.
531	Zealous	ditto	"	Great Eastern Railway Company	280 0	27 1	11 8	455	613	220	iron.
532	Evelyn Mary	ditto	"	T. E. Smith and others	181 6	27 0	15 6	460	569	70	iron, screw.

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Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	—
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
578	21,480	White Squall	London	1864	1860	H. Bake and another	100 0	15 2	Feet. 10ft. 6 5	54	20	iron, screw.
579	50,121	Mass	ditto	"	1864	General Steam Navigation Company	234 9	27 2	14 5	651	180	iron.
580	47,440	Pelican	ditto	"	1863	John Harbottle	187 5	24 0	12 8	383	110	iron, screw.
581	50,129	Medea	ditto	"	1864	B. Hepenstal	93 3	13 4	7 3	34	24	iron.
582	50,130	Amphion	ditto	"	1847	H. A. Coffey and others	184 6	43 4	20 7	784	300	screw.
583	50,131	Marie	ditto	"	1863	M. F. Bremer and others	190 5	24 0	-	383	92	iron, screw.
584	50,137	Nyanza	ditto	"	1864	Peninsular and Oriental Company	327 3	36 2	19 5	1,481	450	iron.
585	50,126	St. Lawrence	ditto	"	"	British Colonial Steam Ship Company (Limited).	255 8	32 4	17 2	1,116	170	iron, screw.
586	50,140	Whisper	ditto	"	"	E. L. Goulburn	252 2	27 1	12 8	498	260	iron.
587	25,109	Brazilian	ditto	"	1862	British and South American Steam Navigation Company (Limited).	274 8	37 7	-	1,395	300	iron, screw
588	25,132	Bolivian	ditto	"	1853	- ditto	272 6	37 3	-	1,366	300	iron, screw.
589	45,950	Peruvian	ditto	"	1863	- ditto	281 1	28 1	22 0	1,713	300	iron, screw.
590	50,144	Rotterdam	ditto	"	1864	Great Eastern Railway Company	215 1	27 0	17 6	557	220	iron.
591	50,147	Maude Campbell	ditto	"	"	E. P. Stringer and another	226 3	28 2	13 0	403	200	iron.
592	45,045	Prince of Hesse	ditto	"	1848	William Hockley and another	75 0	15 8	8 3	21	180	iron.
593	50,152	America	ditto	"	1863	G. J. Goschen	130 6	17 0	5 0	88	60	iron.
594	50,153	Alemania	ditto	"	"	- ditto	130 7	17 0	5 0	88	60	iron.
595	15,987	Ursa Major	ditto	"	1866	T. J. W. Fleming	90 3	17 2	9 3	21	45	iron.
596	49,640	Macgregor	ditto	"	1864	Caledonian Steam Towing Company	108 7	19 9	10 1	53	74	iron.
597	50,156	Conqueror	ditto	"	"	John Cook and others	122 3	20 6	10 1	92	75	iron.
598	50,157	Rattlesnake	ditto	"	"	Edwin L. Goulburn	201 8	24 4	12 5	259	432	iron, screw.
599	50,159	Viper	ditto	"	"	George Wigg	225 0	26 0	9 6	309	180	iron.
600	50,161	Ephesus	ditto	"	"	W. E. MacAndrew	300 3	32 4	24 6	1,638	150	iron, screw.
601	50,163	Eider	ditto	"	"	Royal Mail Packet Company	296 0	32 1	16 2	1,144	300	iron.
602	50,166	Mallorca	ditto	"	"	J. Scott Russell	218 4	26 3	14 0	373	120	iron.
603	50,167	Witch	ditto	"	"	George Fleming	-	-	-	161	249	iron.
604	50,169	Sea King	ditto	"	"	C. C. Nelson and others	117 8	19 5	10 3	78	157	iron.
605	50,174	Stanley	ditto	"	"	London and North Western Railway Company	239 2	29 1	14 9	476	140	iron.
606	50,176	Garibaldi	ditto	"	1865	R. O. Davis	72 5	15 0	7 2	15	32	iron.
607	49,642	Endeavour	ditto	"	"	John Mitchell	105 4	18 4	9 8	39	115	iron.
608	50,179	Pacific	ditto	"	"	Great Eastern Railway Company	207 0	26 2	11 3	353	170	iron.
609	50,182	Hastings	ditto	"	"	F. W. Harris and others	199 3	28 2	16 0	535	90	iron, screw.
610	50,188	Tanfield	ditto	"	"	Richard Cory and others	202 5	28 0	17 4	587	90	iron, screw.
611	28,393	Shamrock	ditto	"	"	S. J. Johnson	65 3	13 8	6 2	28	35	iron, screw.
612	50,185	Louisa Ann Fanny	ditto	"	1865	John Cameron	251 9	27 9	14 8	479	260	iron, screw.
613	50,191	Essex	ditto	"	1864	William Fothergill and others	77 8	16 4	8 7	17	49	iron, screw.
614	50,194	Conservator	ditto	"	1865	Richard Cory and others	202 0	28 1	17 4	587	90	iron, screw.

Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	—
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
657	52,749	Rushine -	London - 1865	1865	Panama, New Zealand, and Australian Royal Mail Company (Limited).	288 1	34 0	17 5	1,018	1,504	350	iron, screw.
658	52,735	James Southern	ditto -	"	F. W. Harris and others -	198 2	28 3	15 8	539	698	90	iron, screw.
659	52,757	Wellesley -	ditto -	"	Hewett and Company (Limited) -	120 4	21 0	10 6	138	186	50	iron, screw.
660	48,061	Sahara -	ditto -	1863	Anglo Egyptian Navigation Company (Limited).	238 4	32 2	17 0	1,078	1,316	200	iron, screw.
661	52,761	Tanjore -	ditto -	1865	Peninsular and Oriental Company -	321 3	38 1	26 4	1,389	1,971	400	iron, screw.
662	48,703	Libra -	ditto -	1864	Anglo-Egyptian Navigation Company (Limited).	234 3	32 2	16 9	1,044	1,283	200	iron, screw.
663	20,452	Rover -	ditto -	1857	F. G. Harrison -	132 3	20 6	10 2	69	187	80	iron.
664	45,526	North Kent	ditto -	1863	David Selman -	94 5	12 6	6 5	31	46	24	
665	53,769	Mary -	ditto -	1865	John Dudgeon -	238 0	27 0	13 7	616	902	250	iron, screw.
666	52,771	Ashford -	ditto -	"	C. M. Norwood and others -	207 5	30 6	14 7	860	1,058	120	iron, screw.
667	52,773	Setubal -	ditto -	"	F. J. Pereira -	165 2	24 0	13 2	270	368	75	iron, screw.
668	52,774	Arno -	ditto -	"	Royal Mail Packet Company -	261 6	30 2	17 0	758	1,038	250	iron.
669	52,779	Orion -	ditto -	"	General Steam Navigation Company -	236 8	27 2	14 3	604	777	200	iron.
670	52,784	Lady Flora	ditto -	"	Robert Ford -	200 8	28 1	17 6	571	726	90	iron, screw.
671	52,785	Avalon -	ditto -	"	Great Eastern Railway Company -	239 8	27 0	13 5	489	670	220	iron.
672	52,789	Sabrina -	ditto -	"	London Steam Navigation Company (Limited)	211 2	28 1	17 4	643	820	99	iron, screw.
673	52,790	Mauritius	ditto -	"	Johannes Avdall -	105 1	26 0	14 3	196	424	260	iron.
674	52,791	Medway -	ditto -	"	John Temperley and others -	285 2	35 4	18 5	1,464	1,823	220	iron, screw.
675	52,792	Rhone -	ditto -	"	Royal Mail Packet Company -	323 0	40 1	17 9	1,954	2,738	500	iron, screw.
676	52,793	Nippon -	ditto -	"	Peninsular and Oriental Company -	223 7	26 6	16 1	529	695	140	iron, screw.
677	52,794	Queen of the Fairies	ditto -	"	T. S. Truss -	46 1	6 3	5 2	6	10	4	patent propelling.
678	52,803	Eptanisos	ditto -	"	Anglo-Greek Steam Navigation and Training Company (Limited).	198 9	29 1	16 7	590	749	140	iron, screw.
679	52,805	The Greek	ditto -	"	- ditto -	198 9	29 1	16 7	590	749	140	iron, screw.
680	52,806	Coumoundwros	ditto -	"	- ditto -	228 0	31 1	18 2	765	970	160	iron, screw.
681	52,807	Esperanza	ditto -	"	R. A. Joy -	165 5	28 3	6 5	176	176	80	iron, engines on deck.
682	51,184	Albany -	ditto -	"	Diamond Steam Navigation Company (Limited).	269 3	32 5	17 7	1,131	1,480	250	iron, screw.
683	51,159	Uitenhage	ditto -	1864	- ditto -	269 3	32 5	17 7	1,118	1,462	250	iron, screw.
684	52,810	Eagle -	ditto -	1865	E. M. de Bussche -	226 1	34 6	20 2	710	1,050	400	iron, screw.
685	22,032	Beaulieu -	ditto -	1858	E. C. Buxton -	64 7	12 2	6 3	20	30	15	iron, screw.
686	52,811	Ravenbury	ditto -	1865	Great Eastern Railway Company -	239 8	27 0	13 5	484	666	220	iron.
687	52,820	Erl King	ditto -	"	John Wade and others -	250 0	34 5	21 7	1,044	1,344	250	iron, screw.

	Champion	Confanza	ditto	"	"	A. E. Redgrave and another James Taylor	99	3	18	3	9	9	56	119	50	iron, en- gines on deck.
688	62,821	-	-	-	-	-	-	-	-	-	-	-	176	176	80	iron, en- gines on deck.
689	52,824	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
690	27,816	-	-	-	-	1859	77	0	14	0	4	7	22	44	20	iron, screw.
691	52,826	-	-	-	-	1865	199	8	28	1	17	4	592	760	90	iron, screw.
692	52,827	-	-	-	-	"	188	6	27	0	15	0	448	563	90	iron, screw.
693	52,836	-	-	-	-	"	219	4	30	2	20	1	778	981	96	iron, screw.
694	52,839	-	-	-	-	"	239	8	33	3	17	3	1,110	1,386	156	iron, screw.
695	52,840	-	-	-	-	"	186	5	24	8	13	9	298	415	90	iron, screw.
696	52,844	-	-	-	-	"	160	6	27	1	14	9	351	466	70	iron, screw.
697	52,849	-	-	-	-	"	84	0	11	6	6	7	19	84	16	iron, screw.
698	54,576	-	-	-	-	1860	84	6	7	4	8	2	11	16	20	iron.
699	50,076	-	-	-	-	1849	225	5	28	3	13	0	399	628	200	iron.
700	54,576	-	-	-	-	1864	159	9	23	0	10	8	220	289	100	iron, screw.
701	54,582	-	-	-	-	1865	-	-	-	-	-	-	-	-	-	-
702	54,583	-	-	-	-	"	199	7	28	1	17	4	592	760	90	iron, screw.
703	54,585	-	-	-	-	"	180	6	28	0	17	0	509	656	80	iron, screw.
704	54,587	-	-	-	-	"	209	0	28	1	17	5	628	804	90	iron, screw.
705	5,591	-	-	-	-	"	183	2	26	1	16	0	471	609	80	iron, screw.
706	16,224	-	-	-	-	"	174	6	27	3	16	8	437	576	90	iron, screw.
707	26,843	-	-	-	-	1857	117	8	19	2	8	0	108	130	32	iron, screw.
708	48,925	-	-	-	-	1860	116	0	20	4	10	0	106	156	40	steel, screw.
709	28,993	-	-	-	-	1864	109	5	19	0	7	7	81	110	36	iron, screw.
710	49,743	-	-	-	-	"	121	8	17	1	9	1	98	137	40	iron, screw.
711	47,428	-	-	-	-	"	81	8	17	1	9	1	21	72	30	iron.
712	4,376	-	-	-	-	"	118	4	19	9	6	4	87	118	30	iron.
713	29,676	-	-	-	-	1868	89	8	15	7	9	4	32	77	40	screw.
714	18,755	-	-	-	-	1863	56	4	9	3	5	3	8	15	12	screw.
715	26,873	-	-	-	-	1859	74	4	17	1	9	5	11	67	33	screw.
716	10,933	-	-	-	-	"	83	6	15	9	8	3	16	66	30	screw.
717	10,932	-	-	-	-	"	64	3	14	4	7	9	8	54	31	screw.
718	11,542	-	-	-	-	1840	69	3	16	1	8	0	13	74	36	iron.
719	46,599	-	-	-	-	1866	152	3	18	0	8	3	96	150	80	iron.
720	22,090	-	-	-	-	1863	81	5	17	2	9	1	22	70	30	iron.
721	7,265	-	-	-	-	1858	135	5	18	1	8	3	95	152	60	iron.
722	47,052	-	-	-	-	1855	74	4	14	7	7	6	11	49	24	iron.
723	3,826	-	-	-	-	1863	90	2	17	5	8	9	22	79	40	iron.
724	16,309	-	-	-	-	1843	100	1	15	9	7	9	38	83	64	iron, screw.
725	3,805	-	-	-	-	1850	101	4	14	8	7	0	38	57	45	iron, screw.
726	3,955	-	-	-	-	1849	124	4	29	9	14	0	272	515	300	iron.
727	14,351	-	-	-	-	1856	142	2	18	1	8	6	66	113	58	iron.
728	3,808	-	-	-	-	1850	125	7	17	4	8	6	94	148	90	iron.
729	15,229	-	-	-	-	1857	144	4	21	4	13	5	189	278	50	iron, screw.
730	15,236	-	-	-	-	"	157	0	19	3	9	4	119	189	120	iron.

Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	—
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
731	18,580	Clifton	Bridgwater 1857	1857	J. Nash and others	Feet. 101/2.	Feet. 101/2.	Feet. 101/2.	304	447	100	iron, screw.
732	18,581	Neptune	ditto	1844	Bristol General Steam Navigation Company	198 5	24 5	13 8	29	130	80	iron.
733	3,944	Avon	ditto	"	New Steam Packet Company	102 0	19 1	9 8	51	103	60	iron, screw.
734	3,947	Severn	ditto	"	ditto	122 5	16 3	8 0	43	91	50	iron, screw.
735	22,008	Gem	ditto	1858	Harman Visger and others	117 4	16 4	8 0	6	11	17	iron, screw.
736	27,326	Jane	ditto	1859	John Payne	50 9	10 6	5 5	11	27	30	screw.
737	14,368	Atlas	ditto	1860	Bristol General Steam Navigation Company	66 8	10 4	5 9	17	100	70	
738	3,834	Samson	ditto	1838	ditto	98 1	17 7	9 8	46	74	55	
739	3,835	Heroules	ditto	"	ditto	75 9	16 4	8 6	37	58	40	
740	3,833	Sampson	ditto	1841	ditto	71 9	16 6	8 5	43	68	40	
741	3,880	Tiger	ditto	"	ditto	82 8	16 8	8 0	50	79	45	
742	3,837	Lion	ditto	"	ditto	77 5	16 7	9 4	39	61	40	
743	3,832	Royal Albert	ditto	1838	ditto	72 8	17 2	8 5	37	59	45	
744	3,831	Panther	ditto	1851	ditto	88 8	15 9	8 7	41	64	45	
745	3,827	Fearless	ditto	1847	ditto	82 8	16 1	8 3	56	89	45	
746	29,213	Enterprise	ditto	1853	ditto	88 1	18 6	9 5	70	97	25	iron, screw.
747	26,808	Athlete	ditto	1860	S. Steeds and another	84 1	16 0	8 0	255	356	80	iron, screw.
748	29,215	Ajax	ditto	1861	R. C. Rowe and others	159 5	23 4	13 9	49	124	80	iron.
749	29,217	Wye	ditto	"	Bristol General Steam Navigation Company	98 1	19 1	9 0	54	108	50	iron.
750	44,102	Milford	ditto	"	Jones Jones and others	116 5	17 0	7 0	68	85	25	iron, screw.
751	44,109	Alarm	ditto	1862	Bristol General Steam Navigation Company	91 6	19 2	7 3	7	21	24	iron, screw.
752	44,110	Dolphin	ditto	1861	ditto	59 3	9 0	7 0	10	32	30	iron, screw.
753	27,323	Teazer	ditto	1853	ditto	63 5	11 8	7 7	12	17	14	screw.
754	44,114	Apollo	ditto	1862	ditto	59 2	7 7	4 5	567	786	250	iron.
755	11,409	Forager	ditto	"	John Payne	234 1	26 2	14 2	69	85	16	screw.
756	27,128	Gem	ditto	1858	Leonard Bruton	84 8	18 4	8 2	63	100	50	iron.
757	2,373	President	ditto	1839	J. Habgood, junior	122 0	18 0	7 8½	113	179	100	
758	45,374	Relief	ditto	1862	Bristol and South Wales Union Railway Company.	114 4	21 4	11 4	94	163	70	iron.
759	44,786	Briton	ditto	1864	Bristol General Steam Navigation Company	117 6	19 6	10 1	229	349	150	iron.
760	17,196	Corsair	ditto	"	John Edwards and others	175 7	24 1	11 6½	179	264	60	iron, screw.
761	45,723	Christopher Thomas	ditto	1857	Leonard Bruton	150 1½	22 2½	12 0	97	159	100	iron.
762	50,343	The Perthshire Lassie	ditto	1864	Bristol General Steam Navigation Company	132 0	20 2	8 0	161	230	50	iron, screw.
763	19,778	Effort	ditto	"	R. C. King	124 0	21 0	12 7½	73	91	15	screw.
764	45,725	Enema	ditto	1862	John Payne	84 2	18 6	8 9	7	22	20	iron, screw.
765	45,728	Calypso	ditto	1865	Bristol General Steam Navigation Company	52 8	11 1	6 3	376	495	91	iron, screw.
766	45,729	Merrimac	ditto	1859	C. J. King	191 8	25 2	14 0	4	11	14	screw.
767	16,310	Alma	ditto	1855	R. C. King	45 7	10 0	4 7	82	104	16	iron, screw.
768	10,191	*Vesta	Caernarvon 1848	1848	Lord Newborough	107 8	18 1	7 1	88	175	70	

769	12,377	*Victoria	-	-	-	1854	1854	F. A. Tampler	-	-	-	-	53	3	8	6	4	9	11	18	40
770	28,619	Wave of Life	-	-	-	1862	1860	Portmadoc Steam Tug Company	-	-	-	-	87	1	16	9	9	3	22	77	35
771	27,733	Rebecca	-	-	-	1864	1859	Caernarvonshire and Merionethshire Steam Ship Company (Limited).	-	-	-	-	136	2	19	1	10	4	138	203	40
772	10,689	*Cardiff Castle	-	-	-	1847	1847	Cardiff Steam Tug Company	-	-	-	-	76	9	17	0	10	0	22	91	60
773	10,694	*Christina Sinclair	-	-	-	1850	1845	- ditto	-	-	-	-	77	0	16	2	9	0	25	60	45
774	3,994	Taliesin	-	-	-	"	1842	Cardiff Steam Navigation Company	-	-	-	-	114	4	16	5	9	1	72	145	80
775	12,599	Storm King	-	-	-	1860	1857	Thomas Elliott and another	-	-	-	-	92	0	17	9	9	0	17	91	55
776	27,204	Black Eagle	-	-	-	"	1847	- ditto	-	-	-	-	90	8	19	0	9	9	23	102	80
777	26,149	Velindra	-	-	-	1861	1860	Cardiff Steam Navigation Company	-	-	-	-	158	4	19	1	9	1	125	198	100
778	19,374	Lady Bute	-	-	-	"	1857	R. H. Michell	-	-	-	-	74	0	16	7	9	2	15	64	50
779	18,876	Night Watch	-	-	-	"	1859	Thomas Elliott	-	-	-	-	83	7	16	9	9	1	13	72	35
780	28,599	Black Eagle	-	-	-	"	1861	Nicholas Strong and others	-	-	-	-	87	4	18	3	9	5	22	88	40
781	4,473	Mary	-	-	-	"	1851	Cardiff Steam Navigation Company	-	-	-	-	95	0	9	0	9	1	18	29	9
782	26,746	Taff	-	-	-	1862	1841	James Ware	-	-	-	-	82	1	18	5	6	0	62	81	25
783	21,276	Gleaner	-	-	-	"	1858	John Brown and others	-	-	-	-	71	0	14	0	7	0	9	42	20
784	29,101	Rifeman	-	-	-	1863	1860	D. Guy and others	-	-	-	-	77	5	15	2	8	3	13	53	28
785	44,257	Severn	-	-	-	"	1862	Bristol Channel Steam Towing Company	-	-	-	-	85	6	17	4	9	2	39	98	60
786	28,339	Tubal Cain	-	-	-	"	1860	N. Strong and others	-	-	-	-	74	0	16	3	8	4	16	57	25
787	27,059	Swift	-	-	-	"	1841	J. H. Insole	-	-	-	-	95	2	17	9	6	6	63	82	23
788	28,804	Gratitude	-	-	-	"	1860	Neath and Briton Ferry Steam Towing Company.	-	-	-	-	78	2	16	5	8	8	13	69	36
789	28,575	John Bull	-	-	-	"	"	W. Gwynn and another	-	-	-	-	75	3	15	4	8	0	16	54	20
790	21,742	Vanguard	-	-	-	1864	1858	Nicholas Strong and others	-	-	-	-	85	8	16	0	9	0	7	72	31
791	16,689	United States	-	-	-	"	1856	Cardiff and Penarth Steam Towing Company (Limited).	-	-	-	-	82	6	18	3	10	0	4	98	60
792	18,587	Iron Duke	-	-	-	"	1857	- ditto	-	-	-	-	112	2	18	0	9	0	47	121	100
793	19,378	Marquis	-	-	-	"	1855	- ditto	-	-	-	-	94	5	18	5	9	0	12	100	80
794	19,371	Ely	-	-	-	"	1858	- ditto	-	-	-	-	80	4	16	0	9	0	9	69	35
795	18,589	Pilot	-	-	-	"	1857	- ditto	-	-	-	-	96	5	18	0	10	4	15	109	60
796	43,759	Fear Not	-	-	-	"	1861	W. H. Martin	-	-	-	-	73	9	15	3	8	1	15	51	26
797	20,139	Nimrod	-	-	-	"	1857	Frederick Allen and others	-	-	-	-	85	1	17	2	9	1	13	73	40
798	49,747	Bob Chambers	-	-	-	"	1864	Peter Gibbs and others	-	-	-	-	90	2	18	9	9	2	28	85	40
799	10,690	William	-	-	-	"	1847	Cardiff and Penarth Steam Towing Company (Limited).	-	-	-	-	78	4	16	0	8	0	14	58	45
800	10,186	Sir Isaac Newton	-	-	-	1865	1863	Joseph Hazell	-	-	-	-	83	3	16	2	9	4	20	69	38
801	50,434	Kate	-	-	-	"	1865	Cardiff Steam Navigation Company	-	-	-	-	74	7	13	8	5	7	21	40	20
802	51,359	Llandaff	-	-	-	"	"	Alexander Dalziel and others	-	-	-	-	152	6	24	3	14	5	311	411	65
803	49,761	Bob Chambers	-	-	-	"	"	Peter Gibbs and others	-	-	-	-	95	8	18	4	9	6	33	93	50
804	16,212	Silloth	-	-	-	1866	1856	Richard Hodgson and others	-	-	-	-	154	4	21	3	11	9	199	292	68
805	12,636	Cumbria	-	-	-	1862	1854	Silloth Bay Steam Navigation Company (Limited).	-	-	-	-	182	0	22	7	12	5	306	383	70
806	3,053	Ariel	-	-	-	"	1847	Richard Hodgson and others	-	-	-	-	173	3	28	8	13	2	206	417	190
807	45,604	Arabian	-	-	-	1863	1863	- ditto	-	-	-	-	87	6	18	2	9	5	27	89	36
808	19,074	Waverley	-	-	-	1864	1864	G. R. Stephenson	-	-	-	-	220	0	26	0	13	4	250	519	300
809	19,075	Carham	-	-	-	"	"	Richard Hodgson and others	-	-	-	-	141	8	20	5	8	5	105	159	60
810	19,076	Waverley	-	-	-	1865	1865	- ditto	-	-	-	-	222	2	26	8	18	6	379	593	280
811	27,009	*Cymro	-	-	-	1848	1848	Great Western Railway Company	-	-	-	-	74	9	14	9	7	9	36	70	33
812	27,018	*Test	-	-	-	1853	1853	- ditto	-	-	-	-	76	8	15	2	8	8	23	73	32

Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	—
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
813	27,003	Hibernia	Chester - 1854	1847	London and North Western Railway Company	Feet. 104 1/2.	Feet. 10 1/2.	Feet. 10 1/2.				
814	24,205	*Royal Victoria	ditto - 1855	1838	James Johnson -	197 8	25 6	14 1	282	486	370	iron.
815	23,188	Sea Nymph	ditto - 1857	1845	London and North Western Railway Company	106 8	14 1	7 8	64	96	65	iron.
816	7,897	Telegraph	ditto -	1853	- - ditto -	206 8	28 8	15 6	248	608	350	iron.
817	8,559	Cambria	ditto - 1860	1848	- - ditto -	244 6	28 8	15 0	375	766	440	iron.
818	28,050	Admiral Moorsom	ditto - 1861	1860	- - ditto -	244 4	27 4	14 6	469	744	400	iron.
819	21,260	*Premier	Clay - 1838	1837	R. Marriott and others	219 0	30 0	15 1	470	746	400	iron.
820	21,221	*Economy	ditto - 1838	1837	James Chapman and others	63 4	14 0	7 7	12	49	80	iron.
821	19,583	Valetta	Cowes - 1859	1855	Louis Twysden -	62 1	13 8	7 6	18	50	25	iron.
822	29,096	Victoria	ditto - 1861	1860	Thomas Davis and another	104 3	12 5	6 8	88	58	35	iron.
823	17,597	Fire Fly	ditto -	1857	Sir Henry Oglander, Bart. -	63 8	13 2	5 6	23	86	16	iron.
824	24,483	Gareloch	ditto - 1863	1855	Isle of Wight Ferry Company	107 9	21 3	11 3 1/2	124	150	—	iron.
825	45,569	Campanera	ditto - 1864	1855	Sir J. B. Guest, Bart. -	146 2	14 0	6 4 1/2	42	66	50	iron.
826	28,099	Nora Creina	ditto - 1864	1859	David Gamble -	109 0	21 1	11 0	88	125	35	screw.
827	17,881	Dartmouth	ditto - 1856	1856	R. M. Mortimore -	89 0	16 0	8 3	38	69	16	iron, screw.
828	17,882	Louisa	ditto -	"	Dartmouth Steam Packet Company (Limited)	85 8	12 0	5 4	31	42	20	iron.
829	17,886	Kingsbridge Packet	ditto - 1857	1857	Robert Hurrell and others -	90 2	9 1	3 6	22	85	10	iron.
830	2,124	Pilot	ditto - 1858	1852	Dartmouth Steam Packet Company (Limited)	77 8	18 9	3 8	48	69	32	iron.
831	29,516	Queen	ditto - 1861	1860	W. H. Prowse and others -	84 8	17 9	9 5	26	101	49	iron.
832	47,881	Newcomin	ditto - 1864	1864	Dartmouth Steam Packet Company (Limited)	59 3	11 6	4 2	11	18	10	iron.
833	47,884	Eclair	ditto - 1865	1865	- - ditto -	108 0	12 0	3 7	81	47	20	iron.
834	16,777	Ondine	Dover - 1866	1847	J. S. Forbes -	179 8	20 2	8 5	180	210	120	iron.
835	44,922	Engineer	ditto - 1863	1860	J. Penn -	151 0	19 1	10 8	79	160	68	iron.
836	44,928	Palmerston	ditto - 1864	1864	Dover Harbour Board	89 9	13 6	6 8	92	40	24	iron.
837	2,489	Haswell	Exeter - 1864	1848	John Holman and others	96 5	18 0	9 4	55	109	60	iron.
838	11,412	*Sydney	Falmouth - 1848	1841	Richard Taylor, jun. -	79 0	17 0	8 7	13	70	45	iron.
839	45,224	Dandy	ditto - 1863	1863	E. Hancock -	80 7	15 5	9 0	14	80	45	iron.
840	45,228	Briton	ditto -	"	H. Fox and another -	105 9	19 1	9 0	49	126	60	iron, screw.
841	45,230	Pendennis	ditto -	1861	R. Taylor -	79 4	16 8	8 9	50	139	60	iron.
842	27,146	Lioness	ditto - 1865	1858	W. G. Geach -	80 2	16 8	8 0	18	60	30	iron.
843	7,643	*Venus	Faversham - 1844	1844	G. Hilton and others -	54 8	10 4	6 6	10	28	16	iron.
844	44,097	Ajax	ditto - 1862	1862	C. J. Hilton and others	56 8	13 7	7 6	18	46	25	iron.
845	10,296	Adjutant	Fleetwood - 1858	1858	J. Williams and another	82 8	17 1	8 1	25	80	40	iron.
846	22,556	Prince Patrick	ditto - 1859	1856	James Holme and others -	231 2	25 2	14 7	340	622	150	iron.
847	17,552	Royal Consort	ditto - 1860	1844	Frederick Kemp -	215 5	29 2	16 0	344	672	300	iron.
848	27,320	Prince Alfred	ditto - 1861	1861	Frederick Kemp and others	227 2	28 2	18 7	539	745	340	iron.
849	45,341	Wyre	ditto - 1862	1862	H. W. Wickham and others	117 7	20 2	8 9	106	165	70	iron.
850	17,039	Ocean Bride	ditto - 1865	1853	George Wilson and another	70 5	14 9	7 0	17	41	30	iron.
851	17,413	*Columbine	Gainsborough 1848	1848	Gainsborough United Steam Packet Company	113 0	16 0	8 0	56	85	40	iron.

852	17,412	*Harlequin	-	-	ditto	-	1858	1848	-	-	-	116	9	14	9	7	7	74	108	40	iron.
853	17,411	*Atalanta	-	-	ditto	-	"	1851	-	-	-	121	0	15	0	7	7	72	101	40	iron.
854	17,427	Ant	-	-	ditto	-	"	1856	-	-	-	72	7	12	5	4	6	24	36	14	iron, screw.
855	12,422	Sea Nymph	-	-	ditto	-	1857	1861	-	-	-	126	6	18	6	10	4	103	151	40	screw.
856	17,430	Bee	-	-	ditto	-	1858	1858	-	-	-	92	6	15	6	7	0	48	78	20	iron, screw.
857	17,437	Fury	-	-	ditto	-	1859	1854	-	-	-	78	9	15	6	7	9	19	46	30	iron.
858	17,431	Iale of Arholme	-	-	ditto	-	1860	1860	-	-	-	130	0	16	1	7	0	57	91	40	iron, screw.
859	26,993	Aberystwith	-	-	ditto	-	1861	1861	-	-	-	121	8	17	1	9	1	98	137	40	iron, screw.
860	12,845	*Clara	-	-	Gloucester	-	1846	1843	-	-	-	85	6	12	5	6	5	34	61	24	iron, screw.
861	20,894	Kilmun	-	-	ditto	-	1859	1859	-	-	-	137	0	15	0	8	0	40	106	80	iron, screw.
862	27,876	Edmund Ironsides	-	-	ditto	-	1860	1860	-	-	-	89	7	19	2	7	4	64	94	20	iron, screw.
863	29,752	Bee	-	-	ditto	-	1861	1859	-	-	-	64	4	12	3	2	4	13	18	12	iron.
864	43,668	Wave	-	-	ditto	-	"	"	-	-	-	86	9	11	3	5	9	29	44	15	iron, screw.
865	43,669	Lapwing	-	-	ditto	-	"	"	-	-	-	64	8	9	4	5	4	13	20	10	iron, screw.
866	11,350	*Judith	-	-	Goole	-	1849	1847	-	-	-	61	3	13	6	7	6	12	44	18	iron.
867	18,064	Empress	-	-	ditto	-	1856	1856	-	-	-	114	1	12	9	5	9	43	63	24	iron, screw.
868	20,196	Contest	-	-	ditto	-	1857	1857	-	-	-	154	3	21	2	12	5	188	277	50	iron, screw.
869	28,562	Tynemouth	-	-	ditto	-	1861	1860	-	-	-	82	5	16	4	8	8	22	69	28	iron.
870	29,206	Uncle Sam	-	-	ditto	-	"	"	-	-	-	83	4	15	9	8	9	25	70	35	iron, screw.
871	44,026	Her Majesty	-	-	ditto	-	1862	1860	-	-	-	129	1	12	3	6	3	66	82	24	iron, screw.
872	22,987	Emily	-	-	ditto	-	"	"	-	-	-	133	5	20	6	12	1	152	224	30	iron, screw.
873	47,117	Aunt Alice	-	-	ditto	-	1863	1863	-	-	-	82	6	17	1	8	7	22	46	35	iron, screw.
874	16,283	Deva	-	-	ditto	-	1864	1867	-	-	-	138	0	21	5	11	7	169	248	40	iron, screw.
875	28,745	Londos	-	-	ditto	-	"	"	-	-	-	159	2	22	7	8	8	229	286	45	iron, screw.
876	26,088	Colletis	-	-	ditto	-	"	"	-	-	-	169	4	23	2	13	0	216	318	60	iron, screw.
877	17,871	Killarney	-	-	ditto	-	1865	"	-	-	-	148	5	21	9	11	4	191	291	70	iron, screw.
878	18,248	Resolute	-	-	ditto	-	"	"	-	-	-	150	8	20	8	4	8	185	249	40	iron, screw.
879	50,423	John Wells	-	-	ditto	-	"	"	-	-	-	191	7	21	3	12	4	297	393	120	iron, screw.
880	47,818	Walter Stanhope	-	-	ditto	-	1851	1863	-	-	-	185	9	25	2	12	5	270	387	140	iron, screw.
881	17,761	*Endeavour	-	-	Grimsby	-	1856	"	-	-	-	64	0	13	6	7	8	21	54	27	iron.
882	15,244	*Peep-o'-day Boy	-	-	ditto	-	1852	1848	-	-	-	62	4	13	3	7	0	13	41	20	iron, screw.
883	10,686	*Tyro	-	-	ditto	-	1854	1838	-	-	-	63	7	14	0	8	8	17	55	22	iron, screw.
884	17,721	Pearl	-	-	ditto	-	1855	1845	-	-	-	59	7	17	5	8	4	53	78	20	iron, screw.
885	11,126	Eugenie	-	-	ditto	-	1856	1856	-	-	-	173	5	26	8	14	0	370	488	80	iron, screw.
886	16,633	Albert	-	-	ditto	-	"	"	-	-	-	175	5	27	8	15	1	339	499	80	iron, screw.
887	16,670	Lord Ashley	-	-	ditto	-	1857	"	-	-	-	188	5	24	8	13	0	296	435	80	iron, screw.
888	18,881	Grimsby	-	-	ditto	-	"	"	-	-	-	208	9	28	5	16	0	443	651	100	iron, screw.
889	7,700	Wilberforce	-	-	ditto	-	1859	"	-	-	-	76	2	16	8	9	0	12	61	40	iron, screw.
890	5,380	Lord Cardigan	-	-	ditto	-	1860	1855	-	-	-	170	0	26	8	15	0	377	472	80	iron, screw.
891	29,476	Golden Horn	-	-	Hartlepool	-	1865	1865	-	-	-	230	4	31	9	23	0	847	1,188	150	iron, screw.
892	51,378	Lerant	-	-	ditto	-	"	"	-	-	-	209	0	28	7	16	3	569	723	100	iron, screw.
893	6,150	Zingari	-	-	Hartlepool, West	-	1860	"	-	-	-	157	0	25	0	12	3	238	342	70	iron, screw.
894	26,103	Ranger	-	-	ditto	-	"	1848	-	-	-	80	8	17	0	9	4	18	76	35	iron, screw.
895	26,102	William Charles	-	-	ditto	-	"	"	-	-	-	83	8	17	3	8	1	19	77	40	iron, screw.
896	5,112	John Bull	-	-	ditto	-	"	"	-	-	-	77	0	18	0	9	1	10	75	40	iron, screw.
897	12,855	Gitana	-	-	ditto	-	"	"	-	-	-	173	0	26	0	14	0	334	490	100	iron, screw.
898	12,869	Gipsy Queen	-	-	ditto	-	1861	1856	-	-	-	207	1	26	3	15	0	455	609	100	iron, screw.

RETURN of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	—
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
899	26,146	West Dock	Hartlepool, West 1861	1849	R. W. Jackson and others	78 9	17 2	Feet. 10/16.	10	64	35	iron.
900	28,289	Conqueror	ditto	1861	W. C. Ward Jackson	107 0	20 4	10 2	56	144	60	iron, screw.
901	26,679	Prompt	ditto	1863	W. S. Lang and another	201 0	25 0	14 0	344	506	160	iron, screw.
902	19,139	Greatham Hall	ditto	1856	M. Pearce and another	194 9	27 2	16 1	462	584	90	iron, screw.
903	12,899	Iron Era	ditto	"	M. Pearce and others	176 3	27 3	14 0	402	494	80	iron, screw.
904	49,804	Island Queen	ditto	1864	John Pile and another	169 6	22 8	12 8	258	319	50	iron, screw.
905	49,805	Fire Queen	ditto	"	Thomas Miller	248 5	29 6	14 1	935	1,164	180	iron, screw.
906	49,808	British Queen	ditto	1865	Pile, Spence, and Company (Limited)	230 2	28 5	16 9	520	676	150	iron, screw.
907	49,809	Storm Queen	ditto	1864	- ditto	158 7	21 9	12 7	262	338	70	iron, screw.
908	49,810	George Pym	ditto	1865	George Pym	199 6	27 9	15 3	485	610	90	iron, screw.
909	18,195	Admiral Cator	ditto	1857	Pile, Spence, and Company (Limited)	178 3	22 1	12 5	233	333	60	iron, screw.
910	1,159	Coral Queen	ditto	1846	- ditto	236 9	26 2	16 6	645	856	90	iron, screw.
911	28,850	Danish Queen	ditto	1855	- ditto	209 0	28 5	16 0	767	956	100	iron, screw.
912	5,151	May Queen	ditto	1854	- ditto	208 0	25 5	13 9	477	576	90	iron, screw.
913	29,737	Bride	Hayle	1864	William Harvey	163 7	23 1	12 0	211	286	100	iron, screw.
914	49,984	Beesie	ditto	1865	- ditto	181 9	20 9	15 1	332	498	150	iron, screw.
915	5,355	*Transit	Hull	1831	W. B. Brownlow and others	70 0	15 1	9 0	9	82	-	-
916	-	*Shannon	ditto	1846	Wakefield Pim	241 4	31 3	19 6	914	1,320	450	iron, screw.
917	18,594	*Emperor	ditto	1849	William Liddle and others	164 9	22 4	9 6	174	291	150	iron, screw.
918	7,563	*Manchester	ditto	"	Manchester, Sheffield, and Lincolnshire Railway Company.	160 8	21 9	9 1	244	244	150	iron.
919	7,564	*Sheffield	ditto	1850	- ditto	76 6	16 5	9 6	38	90	48	iron, screw.
920	16,836	*Black Eagle	ditto	1851	Drogheda Steam Packet Company	113 2	17 6	10 5	111	164	60	iron, screw.
921	12,487	*Fairy	ditto	"	H. H. Cook and others	121 5	23 2	14 2	347	477	100	iron, screw.
922	5,386	*Falcon	ditto	1854	John Lumsden	180 6	24 8	15 0	299	483	120	iron, screw.
923	25,187	*Alster	ditto	"	William Liddle and another	69 5	13 8	8 1	18	54	28	iron, screw.
924	7,699	*Pilot	ditto	1855	W. Shearnsmith, senior	173 4	24 6	12 7	260	357	100	iron, screw.
925	5,364	Hawk	ditto	"	Thomas Voase	149 7	20 2	11 0	170	250	50	iron, screw.
926	5,563	Marlet	ditto	"	John Lumsden and others	169 9	28 0	10 0	291	379	100	iron, screw.
927	5,358	Prince	ditto	1849	- ditto	188 7	26 6	15 7	461	579	70	iron, screw.
928	14,981	St. Petersburg	ditto	1856	William Bayley and others	117 1	29 0	17 0	262	855	40	iron.
929	12,706	Diana	ditto	1857	Whale and Seal Fishing Company	218 4	27 0	16 0	443	651	170	iron, screw.
930	18,159	Tiger	ditto	"	John Lumsden and others	172 0	21 2	12 6	217	310	70	iron, screw.
931	20,263	Swallow	ditto	"	George Lawson and another	223 1	28 0	14 0	500	735	170	iron, screw.
932	20,684	Leopard	ditto	1858	C. M. and J. F. Norwood	187 0	26 0	14 0	443	535	70	iron, screw.
933	20,685	Bolderaa	ditto	"	John Lumsden	71 0	15 2	18 1	21	61	39	iron, screw.
934	16,152	Sampson	ditto	1846	James Swallow and others	80 0	17 2	9 0	15	76	40	iron.
935	22,139	James Watt	ditto	1858	Stephen Gray	84 0	17 8	9 0	12	75	46	iron.
936	10,176	British Hero	ditto	1848	Robert Teall	-	-	-	-	-	-	-

937	5,352	Scandinavian	-	ditto	-	1852	Thomas Wilson	-	-	-	-	186	5	26	0	13	9	323	475	98	iron, screw.
938	26,881	Powerful	-	ditto	-	1857	Hull Dock Company	-	-	-	-	107	0	16	2	8	0	53	119	80	iron.
939	27,023	Zebra	-	ditto	-	1859	John Lumsden	-	-	-	-	196	0	26	5	14	9	426	642	80	iron, screw.
940	5,318	Emerald Isle	-	ditto	-	1859	William Liddle and another	-	-	-	-	172	5	29	2	14	0	368	473	150	iron, screw.
941	11,526	Sultana	-	ditto	-	1856	- ditto	-	-	-	-	180	0	26	0	14	0	415	584	60	iron, screw.
942	27,567	Cossack	-	ditto	-	1859	William Bailey and another	-	-	-	-	218	7	29	4	17	5	768	900	150	iron, screw.
943	27,965	Minister Thorbecke	-	ditto	-	1853	Thomas Voase	-	-	-	-	189	3	22	3	10	0	175	258	60	screw.
944	5,862	Secret	-	ditto	-	1847	Louis Kübling	-	-	-	-	182	4	23	0	12	9	321	392	50	iron, screw.
945	28,358	Argo	-	ditto	-	1860	Thomas Wilson	-	-	-	-	210	4	27	0	16	2	482	709	120	iron, screw.
946	5,353	Humber	-	ditto	-	1854	Thomas Wilson and another	-	-	-	-	211	0	26	2	14	2	465	570	90	iron, screw.
947	15,245	Mary Ann	-	ditto	-	1832	R. L. Wood	-	-	-	-	57	0	13	3	7	2	12	36	15	iron, screw.
948	28,264	Pacific	-	ditto	-	1860	H. D. Wilson	-	-	-	-	203	8	27	2	16	5	575	688	80	iron, screw.
949	28,268	Hecla	-	ditto	-	"	W. W. F. Hay	-	-	-	-	84	0	17	3	19	2	19	76	36	iron, screw.
950	8,110	Excelsior	-	ditto	-	1855	Richard Glover and others	-	-	-	-	180	0	24	2	13	6	286	420	70	iron, screw.
951	28,262	Rob Roy	-	ditto	-	1847	Stephen Gray	-	-	-	-	72	9	15	0	8	2	37	58	28	iron, screw.
952	29,316	Albion	-	ditto	-	1861	Thomas Wilson and others	-	-	-	-	245	2	29	0	17	0	769	900	120	iron, screw.
953	29,318	Nautilus	-	ditto	-	"	John Lumsden	-	-	-	-	210	5	26	4	15	0	526	629	80	iron, screw.
954	4,912	Fletcher's Despatch	-	ditto	-	1839	Henry Booker	-	-	-	-	67	4	15	7	8	4	15	55	28	iron, screw.
955	42,527	Oder	-	ditto	-	1861	Thomas Wilson	-	-	-	-	200	0	27	5	15	0	556	694	100	iron, screw.
956	42,530	Octa	-	ditto	-	"	C. M. Norwood and others	-	-	-	-	186	7	27	2	14	5	464	568	70	iron, screw.
957	18,058	Florence Nightingale	-	ditto	-	"	James Swallow	-	-	-	-	79	0	15	8	8	0	11	60	30	iron, screw.
958	43,811	Panther	-	ditto	-	1861	John Lumsden	-	-	-	-	208	2	27	7	14	3	564	684	80	iron, screw.
959	43,822	Lodona	-	ditto	-	1862	Z. C. Pearson	-	-	-	-	204	2	28	4	16	5	573	688	80	iron, screw.
960	7,642	George and Jane	-	ditto	-	1838	Stephen Gray	-	-	-	-	62	5	12	0	5	8	15	30	14	iron, screw.
961	45,086	Ouse	-	ditto	-	1862	C. H. Wilson	-	-	-	-	214	3	28	8	14	8	601	725	100	iron, screw.
962	45,087	Speedwell	-	ditto	-	"	William Rawson and another	-	-	-	-	100	4	16	4	8	0	81	98	25	iron, screw.
963	45,089	Flora	-	ditto	-	"	Stephen Gray	-	-												

Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	
					Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
986	Lincolnshire	Hull	1865	William Bailey and another	202 4	27 5	18 8	763	898	80	iron, screw.
987	Norfolk	ditto	"	- ditto	241 5	31 0	20 2	1,064	1,259	110	iron, screw.
988	Fruiterer	ditto	"	Lobster and Salmon Fishing Company (Limited)	104 5	18 1	8 4	95	126	85	iron, screw.
989	Aberdeenshire	ditto	"	William Rawson and another	186 3	20 4	12 0	150	220	50	iron, screw.
990	Irwell	ditto	"	J. R. & C. L. Ringrose	198 2	26 2	15 5	467	589	90	iron, screw.
991	Sea Horse	ditto	"	- ditto	195 8	26 4	13 5	385	498	120	iron, screw.
992	Sea Gull	ditto	"	J. R. & C. L. Ringrose and another	212 2	25 6	14 0	356	565	240	iron.
993	Despatch	ditto	"	William Bailey	190 4	25 1	14 7	365	508	96	iron, screw.
994	Alert	ditto	"	J. R. & C. L. Ringrose	176 0	21 4	10 8	260	322	60	iron, screw.
995	Hollander	ditto	"	- ditto	150 4	19 2	10 5	156	226	60	iron.
996	Helen McGregor	ditto	"	Thomas Thompson and others	218 4	26 2	16 0	504	665	230	iron.
997	Swanland	ditto	"	J. R. & C. L. Ringrose	206 5	25 8	13 3	381	560	100	iron, screw.
998	Hull	ditto	"	William Brown and others	206 6	28 7	15 9	657	791	90	iron, screw.
999	Lightning	ditto	"	R. G. Rainforth	82 5	17 0	9 1	12	71	35	
1,000	Lion	ditto	"	John Lumsden and others	221 4	29 2	15 6	747	904	110	iron, screw.
1,001	Czar	ditto	"	William Rawson and another	199 3	26 5	12 2	404	488	80	iron, screw.
1,002	Artemis	ditto	"	William Clements and others	179 7	27 8	14 6	472	558	90	iron, screw.
1,003	Apollo	ditto	"	C. H. & A. Wilson	251 6	32 1	20 5	1,124	1,386	150	iron, screw.
1,004	Ariel	ditto	"	James Leatham and others	168 6	23 1	12 8	292	377	45	iron, screw.
1,005	Nile	ditto	"	J. A. Dunkerley and another	211 9	29 5	16 2	725	868	90	iron, screw.
1,006	Calypso	ditto	"	C. H. & A. Wilson	251 4	32 1	26 5	1,128	1,384	150	iron, screw.
1,007	Milo	ditto	"	Arthur Wilson	212 0	29 2	16 2	688	794	98	iron, screw.
1,008	Neva	ditto	"	J. A. Dunkerley and another	212 1	29 1	16 2	725	868	90	iron, screw.
1,009	European	ditto	"	J. R. & C. L. Ringrose	171 3	24 9	14 4	318	440	140	iron, screw.
1,010	Yorkshire	ditto	"	William Bailey and another	239 4	29 7	18 7	1,006	1,178	120	iron, screw.
1,011	*Atlantis	Ipawich	1864	Eastern Counties Railway Company	104 4	14 3	6 8	50	72	24	iron.
1,012	*Prince	ditto	"	- ditto	100 8	13 8	7 1	48	72	36	
1,013	Queen of the Thames	ditto	"	Waterman's Steam Packet Company	156 0	19 0	8 2	100	143	80	
1,014	Metis	ditto	"	Woolwich Steam Packet Company	141 0	16 3	6 8	59	94	40	
1,015	Petrel	ditto	"	Waterman's Steam Packet Company	152 0	16 0	7 7	82	118	50	iron.
1,016	Queen of the Orwell	ditto	"	Woolwich Steam Packet Company	171 6	18 5	7 9	114	165	54	iron.
1,017	Lady Elizabeth	ditto	"	Waterman's Steam Packet Company	98 3	13 9	6 5	37	59	28	iron.
1,018	Queen of the Isles	ditto	"	- ditto	111 0	13 0	6 8	41	66	32	
1,019	Heron	ditto	"	- ditto	117 4	14 2	6 5	48	64	36	iron.
1,020	Queen	ditto	"	Henry Cristall	120 5	13 5	6 8	43	69	32	iron.
1,021	*Helvellyn	Lancaster	1861	Furness Railway Company	131 1	16 5	8 3	87	153	75	iron.
1,022	Laurel	ditto	1864	W. P. Price	187 4	22 0	12 5	190	265	180	iron.
1,023	*Sultan	ditto	"	James Ramsden	68 3	13 6	6 0	19	52	24	

1,024	18,219	*Sir William Wallace	ditto	"	1858	James Ramsden	-	-	-	27	5	14	4	8	7	28	45	28	iron, screw.
1,025	20,485	Duchess	ditto	"	1858	John Greig and others	-	-	-	128	2	18	2	11	6	60	192	60	iron.
1,026	27,762	Myrtle	ditto	"	1859	W. E. Hutchinson	-	-	-	70	4	13	6	5	0	20	44	20	iron.
1,027	28,499	Shelburne	ditto	"	1861	W. E. Hutchinson and another	-	-	-	213	0	2	0	12	5	240	450	240	iron.
1,028	28,488	Talbot	ditto	"	1866	ditto	-	-	-	218	6	24	0	12	5	240	450	240	iron.
1,029	28,907	Roe	ditto	"	1866	ditto	-	-	-	286	6	25	2	18	5	240	559	240	iron.
1,030	54,588	Duchess	ditto	"	1866	W. E. Hutchinson and others	-	-	-	110	6	17	9	8	4	80	120	80	iron, screw.
1,031	16,174	*Manchester	Liverpool	"	1826	David Bellhouse	-	-	-	72	5 in.	16	6 in.	8	2 in.	24	-	24	iron, screw.
1,032	-	*Satellite	ditto	"	1831	North Wales Steam Packet Company	-	-	-	74	8 in.	16	0	7	10 in.	70	-	70	iron.
1,033	-	*Cleveland	ditto	"	1836	Liverpool Steam Ferry Company	-	-	-	86	4	18	1	7	9	60	96	60	iron.
1,034	16,866	*William Fawcett	ditto	"	1838	Willoughby & Son	-	-	-	74	3	15	1	8	4	60	90	60	iron.
1,035	-	*Thomas Royden	ditto	"	1837	Nichol, Lawson & Co.	-	-	-	90	7	15	1	7	4	45	108	45	iron.
1,036	7,061	*Power	ditto	"	1840	Mersey and Irwell Navigation Company	-	-	-	81	6	16	1	8	6	50	97	50	iron.
1,037	7,062	*Rival	ditto	"	1841	ditto	-	-	-	81	8	16	2	8	0	50	100	50	iron.
1,038	-	*Eclipse	ditto	"	1826	Thomas M'Tear and another	-	-	-	104	0	16	9	10	8	-	174	-	iron.
1,039	16,869	*Mersey	ditto	"	1841	Edward Willoughby & Son	-	-	-	87	5	16	4	7	9	45	107	45	iron.
1,040	-	*Blanche	ditto	"	1842	Trustees of the Duke of Bridgewater	-	-	-	105	4	17	1	8	0	-	205	-	iron.
1,041	6,010	*Elizabeth	ditto	"	1840	Wallasey Local Board	-	-	-	88	6	16	3	7	3	36	96	36	iron.
1,042	16,858	*Birkenhead	ditto	"	1846	Edward Willoughby & Son	-	-	-	100	7	17	1	10	0	60	182	60	iron.
1,043	6,012	*James Atherton	ditto	"	1847	Wallasey Local Board	-	-	-	116	0	16	3	7	6	108	108	50	iron.
1,044	16,857	*Britannia	ditto	"	1847	Edward Willoughby & Son	-	-	-	111	6	17	0	8	5	124	124	100	iron.
1,045	16,899	*Colechester	ditto	"	1848	Edward Forster	-	-	-	91	2	16	9	9	8	35	119	30	iron.
1,046	10,662	*Powerful	ditto	"	1849	James Haddock	-	-	-	102	5	19	1	10	5	32	144	120	iron.
1,047	-	*Bolivia	ditto	"	1849	Pacific Steam Navigation Company	-	-	-	197	5	26	0	15	0	509	773	-	iron.
1,048	6,014	*Wallasey	ditto	"	1847	Wallasey Local Board	-	-	-	109	8	16	6	9	0	49	109	45	iron.
1,049	16,176	*Duke of Sussex	ditto	"	1840	J. R. Murphy	-	-	-	82	0	16	8	8	8	31	92	40	iron.
1,050	20,758	*Queen	ditto	"	1844	Birkenhead Improvement Commissioners	-	-	-	169	4	21	2	9	7	126	173	60	iron.
1,051	20,759	*Wirral	ditto	"	1846	ditto	-	-	-	109	1	20	9	11	0	111	193	60	iron.
1,052	12,110	*Prince Albert	ditto	"	1849	Marquis of Titchfield	-	-	-	78	0	16	4	8	8	24	75	45	iron.
1,053	4,241	*Zephyr	ditto	"	1832	W. H. Owen	-	-	-	113	5	17	3	10	7	104	177	90	iron.
1,054	2,373	*Tartar	ditto	"	1851	Liverpool Steam Tug Company	-	-	-	113	9	20	2	11	3	113	244	110	iron.
1,055	15,896	City of Manchester	ditto	"	1851	Inman and others	-	-	-	261	8	36	2	25	8	1,296	2,096	450	iron, screw.
1,056	1,677	*Frankfort	ditto	"	"	J. J. Bibby and others	-	-	-	190	0	26	6	16	8	414	657	100	iron, screw.
1,057	16,849	*Vernon	ditto	"	"	E. & S. Willoughby	-	-	-	121	8	16	2	7	9	88	182	60	iron.
1,058	16,850	*Cato	ditto	"	1849	ditto	-	-	-	109	7	17	9	8	4	56	127	60	iron.
1,059	-	*Ramsgate Packet	ditto	"	1834	Thomas Prestopino	-	-	-	94	5	14	9	9	8	58	109	-	iron.
1,060	26,044	*Samson	ditto	"	1848	Liverpool Steam Tug Company	-	-	-	114	7	21	0	16	5	72	185	100	iron.
1,061	15,046	*Tiger	ditto	"	1858	Wallasey Local Board	-	-	-	9	1	16	0	9	8	54	107	40	iron.
1,062	6,033	*Constitution	ditto	"	"	Peter Maddox and others	-	-	-	193	9	23	3	11	9	49	262	120	iron.
1,063	1,153	*Douro	ditto	"	"	O. T. Fallenstein	-	-	-	155	7	23	2	12	4	185	278	52	iron, screw.
1,064	7,014	*Invincible	ditto	"	"	John Rigby	-	-	-	105	0	16	6	8	9	60	111	70	iron.
1,065	2,000	*Orontes	ditto	"	1851	G. M. Papayanni and others	-	-	-	188	5	26	8	17	0	588	748	140	iron, screw.
1,066	9,167	*Ottawa	ditto	"	1853	Peninsular and Oriental Company	-	-	-	238	8	29	2	23	8	815	1,076	200	iron, screw.
1,067	7,030	*Iron King	ditto	"	1854	H. J. Ward and others	-	-	-	123	0	18	3	10	8	79	172	400	iron.
1,068	1,152	*Minho	ditto	"	"	George Trigg	-	-	-	175	3	22	0	13	5	254	400	82	iron, screw.
1,069	1,058	*Tamaniipas	ditto	"	"	W. M. Moss	-	-	-	163	3	23	7	13	6	336	458	80	iron, screw.
1,070	24,930	*Pleid	ditto	"	1852	Hayes & Hudson	-	-	-	104	6	20	4	8	8	71	117	40	iron, screw.
1,071	23,923	*Blarney	ditto	"	1846	W. D. Applebee and another	-	-	-	184	7	20	0	11	1	209	252	-	iron, screw.
1,072	24,085	*Thomas Wilson	ditto	"	1845	Wallasey Local Board	-	-	-	92	7	14	8	8	4	49	89	50	iron.

RETURN of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
1,073	1,151	*Cintra	Liverpool	1854	Charles Colesworth and others	176 4	23 1	Feet. 10 1/2.	350	517	166	iron, screw.
1,074	-	*Conqueror	ditto	1855	W. & J. Binns	73 6	14 7	8	21	66	-	iron.
1,075	25,967	Great Britain	ditto	1840	Liverpool and Australian Navigation Company	274 0	48 2	31 5	1,734	3,509	500	iron, screw.
1,076	14,550	*City of Baltimore	ditto	1855	William Inman and others	325 4	38 1	25 8	1,225	2,868	500	iron, screw.
1,077	1,840	Corinthian	ditto	"	J. J. Bibby and others	288 5	29 7	20 0	704	1,170	153	iron, screw.
1,078	2,907	Mcander	ditto	"	- ditto -	289 1	30 2	19 0	662	974	160	iron, screw.
1,079	24,277	Hawk	ditto	"	Viscount Hill	84 8	17 0	8 0	118	142	15	iron, screw.
1,080	25,775	Neptune	ditto	1853	Charles McIver	71 1	9 4	4 2	13	18	10	iron, screw.
1,081	25,315	Universe	ditto	1855	Peter Maddox and others	185 3	23 4	11 2	148	311	120	iron.
1,082	19,715	Albanian	ditto	"	John Bibby and others	237 9	30 2	19 8	703	1,034	180	iron, screw.
1,083	22,838	Thessalia	ditto	"	G. M. Papayanni and others	257 0	30 8	20 1	795	1,169	200	iron, screw.
1,084	26,081	Enterprise	ditto	"	Peter Maddox and others	136 0	23 1	11 4	150	319	120	iron.
1,085	1,758	Arcadia	ditto	"	G. M. Papayanni and others	234 6	31 1	20 5	741	1,089	150	iron, screw.
1,086	22,983	City of Washington	ditto	"	William Inman and others	319 0	40 1	19 2	1,619	2,381	460	iron, screw.
1,087	2,374	Lioness	ditto	1856	G. K. Dixon and others	90 8	18 4	7 9	58	98	50	iron.
1,088	6,041	Victoria	ditto	1855	H. K. Aspinall	92 0	16 1	7 4	60	89	30	iron, screw.
1,089	10,470	Milan	ditto	"	J. J. Bibby and others	240 2	31 2	19 5	736	1,088	210	iron, screw.
1,090	24,265	Star	ditto	1845	E. G. & S. Willoughby	94 1	16 2	7 6	43	67	140	iron.
1,091	10,550	Araxes	ditto	1855	W. M. Moss and others	251 5	32 0	21 1	786	1,156	180	iron, screw.
1,092	10,551	United States	ditto	"	United Steam Tug Company	187 1	23 1	11 4	75	235	130	iron.
1,093	25,358	Great Conquest	ditto	"	John Strong and others	186 8	22 1	10 6	50	191	100	iron.
1,094	10,498	Cleator	ditto	"	Alfred Holt and others	160 4	22 9	13 1	269	342	50	iron, screw.
1,095	13,588	Bruganza	ditto	1854	Frederick Chapple and others	180 7	25 2	15 0	400	507	80	iron, screw.
1,096	14,783	Annie Vernon	ditto	1856	John Bacon and others	170 0	26 6	16 7	422	519	70	iron, screw.
1,097	15,048	Laconia	ditto	"	G. M. Papayanni and others	256 5	31 1	20 0	783	1,151	200	iron, screw.
1,098	15,052	Fire King	ditto	"	H. J. Ward	105 6	18 8	10 4	76	121	60	iron.
1,099	15,869	Inca	ditto	"	Pacific Steam Navigation Company	180 7	20 8	10 8	230	290	80	iron.
1,100	7,855	Comet	ditto	1854	W. & E. Forster	137 0	18 9	9 0	93	148	80	iron.
1,101	15,377	Fury	ditto	1856	Liverpool Steam Tug Company	131 7	20 8	10 2	127	200	100	iron.
1,102	6,381	Toward Castle	ditto	"	E. Prendeville and others	106 2	15 5	7 6	50	79	50	iron.
1,103	16,166	Blazer	ditto	1856	Liverpool Steam Tug Company	150 4	23 1	13 1	212	337	180	iron.
1,104	16,167	Conqueror	ditto	"	Cruse & Downham	90 8	16 7	9 1	51	82	60	iron, screw.
1,105	16,188	Rhone	ditto	"	J. J. Bibby and others	257 2	34 6	22 5	943	1,387	180	iron, screw.
1,106	16,200	Sovereign	ditto	"	John Erskine and others	177 9	26 2	12 9	293	439	90	iron, screw.
1,107	15,197	Albion	ditto	1834	J. L. Lloyd	115 5	16 3	10 3	78	124	60	iron, screw.
1,108	16,882	Danube	ditto	1856	J. J. Bibby and others	257 3	34 6	22 5	942	1,386	180	iron, screw.
1,109	17,782	Plymlymon	ditto	"	T. & J. Vernon	125 5	20 5	11 1	142	209	50	iron, screw.
1,110	17,783	Valparaiso	ditto	"	Pacific Steam Navigation Company	234 1	29 1	14 4	839	1,060	320	iron.
1,111	11,570	Despatch	ditto	1857	Liverpool Steam Tug Company	129 0	20 2	10 0	114	161	80	iron.

	12,199	1,112	Gipsy	-	-	1857	W. D. Applebee and others	-	-	62	6	12	0	4	0	23	33	10	iron, screw.
1,113	14,638	-	Chiefain	-	-	1856	Peter Dixon	-	-	90	2	17	4	9	4	56	89	50	iron, screw.
1,114	19,183	-	Annie	-	-	1857	F. D. P. Astley	-	-	86	0	13	0	6	5	27	40	25	iron, screw.
1,115	22,612	-	Montagu	-	-	1855	John Bacon and others	-	-	190	7	26	4	12	7	300	447	100	iron, screw.
1,116	19,671	-	Bridgewater	-	-	1857	Algernon Egerton	-	-	109	2	20	1	8	1	79	126	70	iron.
1,117	2,139	-	Paragon	-	-	1852	J. Seed	-	-	78	0	16	2	8	5	37	59	30	iron.
1,118	19,969	-	James Kennedy	-	-	1857	John Bacon and others	-	-	175	0	27	5	17	2	418	535	70	iron, screw.
1,119	20,132	-	Crimean	-	-	"	J. J. Bibby and others	-	-	261	7	36	0	22	0	1,002	1,473	252	iron, screw.
1,120	20,281	-	Sailor King	-	-	"	H. J. Ward and others	-	-	105	2	19	0	10	0	57	118	60	iron.
1,121	16,848	-	Fanny	-	-	1846	T. G. Winder	-	-	121	2	17	5	7	2	56	89	45	iron.
1,122	20,453	-	Retriever	-	-	1857	New Steam Tug Company	-	-	158	8	23	0	12	0	54	300	140	iron.
1,123	2,371	-	Victoria	-	-	1837	W. & T. Joliffe	-	-	114	8	21	4	10	9	118	193	100	iron.
1,124	20,460	-	Agia Sofia	-	-	1857	G. M. Papayanni and others	-	-	259	0	34	0	22	0	977	1,437	200	iron, screw.
1,125	20,536	-	Storm King	-	-	"	H. J. Ward and others	-	-	137	0	21	0	11	1	100	199	100	iron.
1,126	20,541	-	Rescue	-	-	"	Liverpool Steam Tug Company	-	-	139	6	20	3	10	0	127	202	100	iron.
1,127	20,774	-	Earl of Ellesmere	-	-	"	Algernon Egerton	-	-	109	9	20	0	8	0	72	114	60	iron.
1,128	21,054	-	United Kingdom	-	-	"	United Steam Tug Company	-	-	141	8	24	1	12	2	130	281	150	iron.
1,129	21,061	-	Brother Jonathan	-	-	"	- ditto	-	-	140	8	24	2	12	6	178	293	150	iron.
1,130	21,488	-	Wasp	-	-	1858	Southport Steam Packet and Floating Bath Company (Limited).	-	-	131	9	19	0	8	5	82	130	70	iron.
1,131	21,492	-	Firefly	-	-	"	G. E. Dering	-	-	74	0	10	8	5	0	16	24	20	iron, screw.
1,132	14,544	-	Genova	-	-	1850	C. B. Harrington and others	-	-	165	0	25	5	15	3	342	502	100	iron, screw.
1,133	26,076	-	Albion	-	-	1858	Lord Otho A. Fitzgerald	-	-	112	1	17	1	8	0	38	74	50	iron, screw.
1,134	6,040	-	Mary Agnes	-	-	1848	W. & T. Joliffe	-	-	93	0	17	7	8	8	51	81	40	iron.
1,135	26,169	-	Callao	-	-	1858	Pacific Steam Navigation Company	-	-	235	0	29	0	14	5	841	1,062	320	iron.
1,136	1,608	-	Kangaroo	-	-	1853	William Inman and others	-	-	257	2	36	2	19	9	1,196	1,719	300	iron, screw.
1,137	27,649	-	Kong Brage	-	-	1859	H. M. Lawrence	-	-	102	5	17	1	7	7	63	84	40	iron.
1,138	17,490	-	Ionia	-	-	1856	J. J. Bibby and others	-	-	244	4	32	1	26	9	944	1,358	210	iron, screw.
1,139	20,451	-	Cairo	-	-	1857	- ditto	-	-	256	2	35	0	22	0				

Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.				DIMENSIONS.			TONNAGE.		Horse Power.	—
								Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
								Feet. 10/16.	Feet. 10/16.	Feet. 10/16.				
1,160	Victory	Liverpool	1860	1844	Charles Johnson	-	-	93 4	16 0	9 0	56	89	40	iron, screw.
1,161	Lion	ditto	"	1856	Thomas Smith and another	-	-	116 3	20 0	11 3	87	163	80	iron.
1,162	Berlin	ditto	"	1857	General Steam Navigation Company	-	-	226 5	28 0	-	487	740	420	iron.
1,163	Esigador	ditto	"	1860	T. B. Gibbons	-	-	119 0	18 7	7 0	93	114	30	iron, screw.
1,164	Cognac	ditto	"	"	James Harrison and others	-	-	170 0	25 1	16 4	376	490	70	iron, screw.
1,165	Deerhound	ditto	1861	1858	John Lancaster	-	-	128 6	16 6	-	99	125	56	iron, screw.
1,166	Hercules	ditto	"	1861	Cruze & Downham	-	-	112 6	19 6	10 2	73	152	70	iron.
1,167	Rover	ditto	"	"	New Steam Tug Company	-	-	115 6	19 6	10 2	76	156	70	iron.
1,168	Grecian	ditto	"	"	J. J. Bibby and others	-	-	310 0	34 0	24 0	1,555	1,854	400	iron, screw.
1,169	Tiber	ditto	"	1831	- ditto	-	-	274 0	29 3	19 4	980	1,157	250	iron, screw.
1,170	Speedwell	ditto	"	1861	John Prendeville and others	-	-	121 0	18 3	8 7	81	131	64	iron.
1,171	Memnon	ditto	"	"	William Rathbone, jun., and others	-	-	253 6	32 0	23 0	927	1,209	150	iron, screw.
1,172	Italian	ditto	"	"	J. J. Bibby and others	-	-	310 0	34 0	24 0	1,560	1,859	250	iron, screw.
1,173	Eastham Fairy	ditto	"	"	H. M. Lawrence	-	-	125 0	19 2	7 7	79	115	60	iron.
1,174	Secretary	ditto	"	1847	C. & J. Cochran	-	-	93 1	17 0	9 1	37	100	56	iron.
1,175	Swifsure	ditto	"	1861	Henry Gough	-	-	125 0	19 2	7 7	79	115	60	iron, screw.
1,176	Bermuda	ditto	"	"	Edwin Haigh	-	-	216 2	29 0	20 4	717	897	135	iron, screw.
1,177	Glasgow	ditto	"	"	Matthew Wells	-	-	81 8	19 1	7 1 1/2	55	88	35	iron.
1,178	Inland Queen	ditto	"	1861	J. Bland and others	-	-	141 5	23 1	11 2	120	255	110	iron.
1,179	Etna	ditto	"	1855	William Inman and others	-	-	308 6	37 4	19 0	1,494	2,120	450	iron, screw.
1,180	Egyptian	ditto	"	1861	J. J. Bibby and others	-	-	335 0	34 2	24 0	1,639	1,986	260	iron, screw.
1,181	Slasher	ditto	"	"	Liverpool Steam Tug Company	-	-	133 8	21 2	11 0	109	196	90	iron.
1,182	Calpe	ditto	"	1852	J. J. Bibby and others	-	-	207 2	29 0	20 0	1,134	1,347	220	iron, screw.
1,183	Colonia	ditto	"	1861	H. M. Lawrence and another	-	-	99 6	15 0	7 3	62	80	30	iron, screw.
1,184	Peru	ditto	"	"	Pacific Steam Navigation Company	-	-	260 4	32 1	15 2	904	1,307	360	iron.
1,185	Cruizer	ditto	1862	"	Liverpool Steam Tug Company	-	-	156 4	25 0	12 8	193	364	180	iron.
1,186	Dalmatian	ditto	"	1862	J. J. Bibby and others	-	-	335 0	34 2	24 0	1,693	1,989	400	iron, screw.
1,187	Dragon	ditto	"	1861	Thomas Harrison and others	-	-	160 0	22 6	12 8	257	315	60	iron, screw.
1,188	Pioneer	ditto	"	1862	William Jackson	-	-	41 4	6 2	3 0	1	5	8	iron, experimental.
1,189	Talca	ditto	"	"	Pacific Steam Navigation Company	-	-	194 1	30 0	16 0	469	708	260	iron.
1,190	Estella	ditto	"	"	Alexander Caugh	-	-	54 6	15 6	6 0	18	28	16	screw.
1,191	Flying Childers	ditto	"	1857	Stephenson Chisholm, jun., and others	-	-	86 0	17 0	9 9	12	81	40	iron.
1,192	Robert Ingham	ditto	"	1866	W. & T. Jolliffe	-	-	87 7	18 1	9 6	13	84	48	iron.
1,193	Agilia	ditto	"	1847	Alexander Durant	-	-	193 2	27 9	13 8	201	457	350	iron.
1,194	Florida	ditto	"	1860	British and American Steam Ship Company (Limited).	-	-	267 2	37 0	21 0	1,452	1,707	250	iron, screw.
1,195	Alabama	ditto	"	"	- ditto	-	-	267 2	37 0	21 0	1,432	1,712	250	iron, screw.
1,196	Hero	ditto	"	1846	J. G. Mowle and others	-	-	78 3	16 3	8 4	29	74	40	iron, screw.

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Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	—
					Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
1,246	Three Daisies -	Liverpool -	1864	W. H. Scott	Feet. 10 1/2.	Feet. 10 1/2.	Feet. 10 1/2.	37	51	16	iron, screw.
1,247	Maggie Lander -	ditto -	1863	D. L. Cargill	65 6	16 1	6 6 1/2	69	130	60	iron, screw.
1,248	Oasis -	ditto -	1855	N. D. Spartali	90 4	20 7	9 5	917	1,167	150	iron, screw.
1,249	Mary -	ditto -	1863	A. B. Forwood	245 2	28 9	14 8	279	389	120	iron.
1,250	Virginia -	ditto -	"	National Steam Navigation Company (Limited)	197 8	30 1	9 8	2,418	2,888	350	iron, screw.
1,251	Bagdad Packet -	ditto -	1864	Edward McDowell	341 8	41 2	20 4	106	141	60	iron.
1,252	Nun -	ditto -	1840	Birkenhead Improvement Commissioners	124 6	22 0	6 1	127	177	70	iron.
1,253	Cheshire -	ditto -	1863	- ditto	150 0	30 0	11 0 1/2	400	528	100	iron.
1,254	Prince -	ditto -	1844	- ditto	106 2	22 0	-	139	182	60	iron.
1,255	Lord Morpeth -	ditto -	1847	- ditto	116 6	22 1	-	117	193	70	iron.
1,256	Experiment -	ditto -	1864	H. E. Falks	78 8	17 0	7 4 1/2	72	87	16	iron, screw.
1,257	Tristram Shandy -	ditto -	"	M. J. Wilson	222 5	23 1 1/2	9 6	211	345	160	iron.
1,258	Willing Mind -	ditto -	1855	Thomas Street and others	84 5	17 5 1/2	9 5	52	82	45	steel.
1,259	Lynx -	ditto -	1804	Richard Wright	219 7	24 1	11 5 1/2	238	372	150	iron.
1,260	Georgina McCaw -	ditto -	"	M. G. Klingender	179 0	26 2	-	378	563	250	iron, screw.
1,261	Belgian -	ditto -	1865	Bryce Allan and others	298 0	38 6	-	1,469	2,067	375	iron, screw.
1,262	Louisiana -	ditto -	1862	National Steam Navigation Company (Limited)	807 2	39 9	25 7	1,643	2,167	300	iron, screw.
1,263	Rosetta -	ditto -	1864	W. M. Moss and others	214 0	28 9	14 3	748	972	120	iron, screw.
1,264	Flying Childers -	ditto -	1859	John Seed -	78 4	15 7 1/2	8 7 1/2	17	60	50	iron.
1,265	Wonder -	ditto -	1857	Thomas Smith	112 6	18 9 1/2	10 2 1/2	23	127	60	iron, screw.
1,266	Robert Todd -	ditto -	1864	A. B. Forwood	157 4	24 0	12 7	218	314	80	iron, screw.
1,267	Robert Bruce -	ditto -	1852	W. Handley and others	91 8	18 8	8 2	42	83	45	iron.
1,268	Tiger -	ditto -	1864	W. Jolliffe and another	122 0	20 4 1/2	10 8	89	170	75	iron.
1,269	Galileo -	ditto -	"	W. S. Brown and others	276 0	33 1	23 1	1,271	1,525	150	iron, screw.
1,270	Adventurer -	ditto -	1852	H. C. Bagot and another	59 8	12 9	7 2	25	40	20	iron, screw.
1,271	Georgia -	ditto -	1863	Edward Bates	219 0	27 2 1/2	14 7 1/2	427	648	200	iron, screw.
1,272	Golden Pledge -	ditto -	"	M. G. Klingender	163 4	16 0	6 5	74	109	72	iron.
1,273	Ruby -	ditto -	"	George Edmiston	182 4	17 2	-	129	191	90	iron.
1,274	Columbus -	ditto -	1863	R. W. Preston	113 3	20 3	-	107	156	75	iron.
1,275	Mary -	ditto -	1863	Henry Lafone	125 6	22 0	9 4 1/2	124	194	60	screw.
1,276	Relief -	ditto -	"	New Steam Tug Company (Limited)	89 2	17 5	9 2	44	104	60	iron.
1,277	Great Emperor	ditto -	"	W. Jolliffe and another	148 7	23 1	11 8	109	252	110	iron.
1,278	Sea King	ditto -	"	H. J. Ward	133 3	19 0	11 2	88	191	96	iron.
1,279	Champion	ditto -	"	John Redhead	80 6	16 1	-	31	73	45	iron, screw.
1,280	Erin -	ditto -	1864	National Steam Navigation Company (Limited)	370 4	41 1	20 3 1/2	2,807	3,319	350	iron, screw.
1,281	Owl -	ditto -	"	C. K. Pridleau	280 2	26 1	10 9	330	467	180	steel.
1,282	Pehlwan -	ditto -	"	Gilbert Cowie	101 6	17 6	8 3	51	98	45	iron.
1,283	Rustan -	ditto -	"	- ditto	101 6	17 6	8 3	51	98	45	iron.
1,284	Sea Queen	ditto -	1859	West India and Pacific Steam Ship Company (Limited).	238 6	26 4	12 9	677	886	120	iron, screw.

[illegible]

Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	—
					Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
					Fet. 10ths.	Fet. 16ths.	Fet. 16ths.				
1,331	Snipe	Liverpool	1865	J. N. Dickenson	224 3	24 0	11 4	163	409	180	steel.
1,332	Abigail	ditto	"	E. L. Golborne	202 0	30 0	12 0	436	644	300	steel.
1,333	Knight Templar	ditto	1864	Edward Prendeville and others	139 4	31 5	11 1	107	206	100	iron.
1,334	Tyne Queen	ditto	1865	Channel Steam Ship Company (Limited)	193 0	20 1	16 9	540	699	120	iron, screw.
1,335	Jane Bacon	ditto	"	John Bacon and others	179 0	26 5	14 0	394	505	70	iron, screw.
1,336	Ada Wilson	ditto	"	H. E. Moss	219 0	28 0	15 9	690	789	120	iron, screw.
1,337	Pacific	ditto	"	Pacific Steam Navigation Company	267 4	40 2	17 0	1,174	1,631	450	iron.
1,338	Bee	ditto	1865	Rock Ferry Company (Limited)	122 4	18 1	7 4	65	104	60	iron.
1,339	Ant	ditto	"	" ditto	123 6	18 1	7 5	65	102	60	iron.
1,340	Ptolemy	ditto	"	W. J. Lamport and others	257 2	31 2	19 7	799	1,115	80	iron, screw.
1,341	Gambia	ditto	1860	Henry Lafone	232 8	33 4	19 5	929	1,167	200	iron, screw.
1,342	Vale of Clwyd	ditto	1865	R. W. Preston	186 0	18 1	7 0	99	155	90	iron.
1,343	Plantagenet	ditto	1869	West India and Pacific Steam Ship Company (Limited).	202 4	27 3	16 4	472	695	70	iron, screw.
1,344	Cristobal Colon	ditto	1864	" ditto	278 6	37 0	-	1,108	1,598	250	iron, screw.
1,345	St. Thomas	ditto	1863	" ditto	226 0	31 2	17 4	998	1,246	150	iron, screw.
1,346	Hayti	ditto	1864	" ditto	260 0	30 3	20 3	877	1,122	196	iron, screw.
1,347	Jenny Jehu	ditto	1861	Kirkless Hall Steam Navigation Company (Limited).	143 1	19 3	11 7	141	197	52	iron, screw.
1,348	City of New York	ditto	1865	William Isman	294 8	39 3	18 4	1,474	2,084	350	iron, screw.
1,349	Darien	ditto	1863	West India and Pacific Steam Ship Company (Limited).	204 5	31 6	16 8	907	1,172	130	iron, screw.
1,350	Amazon	ditto	1865	Thomas Harrison	299 9	28 5	15 6	528	678	90	iron, screw.
1,351	Bolivar	ditto	1868	West India and Pacific Steam Ship Company (Limited).	249 9	32 5	19 7½	963	1,180	160	iron, screw.
1,352	Lancashire	ditto	1865	Birkenhead Improvement Commissioners	169 0	30 1	-	219	489	120	iron.
1,353	Woodsale	ditto	"	" ditto	169 6	32 2	10 9	169	373	120	iron.
1,354	Litania	ditto	"	Pacific Steam Navigation Company	267 2	40 2	17 6	1,162	1,622	400	iron.
1,355	Kirkless	ditto	"	Kirkless Hall Steam Navigation Company (Limited).	150 8	24 0	12 6	865	375	60	iron, screw.
1,356	Pisano	ditto	"	Alexander Duranty, junior	111 5	22 0	6 6	86	125	20	iron, screw.
1,357	Cuba	ditto	"	West India and Pacific Steam Navigation Company (Limited).	248 7	31 7	19 8	968	1,334	120	iron, screw.
1,358	Rosine	ditto	"	C. K. Prioleau	269 8	33 0	15 6	391	900	300	steel.
1,359	Hornet	ditto	"	" ditto	230 2	28 0	11 2	329	574	220	steel.
1,360	Her Majesty	ditto	"	W. R. Chisholm and another	92 5	18 4	9 5	61	94	89	iron, screw.
1,361	Thebes	ditto	"	W. M. Moss and others	221 5	34 8	9 5	1,733	2,068	180	iron, screw.
1,362	Royal Saxon	ditto	"	R. H. Brown and others	191 5	20 1	10 4	78	157	92	iron.
1,363	Krishna	ditto	"	William Brand	260 0	34 3	21 0	967	1,855	250	iron, screw.

1864	44,884	Cruiser -	-	-	ditto	-	1862	West India and Pacific Steam Ship Company (Limited).	231	3	30	9	18	7	725	901	100	iron, screw.
1,864	29,902	Seotland -	-	-	ditto	-	1865	National Steam Navigation Company (Limited)	382	0	43	2	21	0	2,940	3,699	400	iron, screw.
1,865	48,660	Spicy -	-	-	ditto	-	1864	H. E. Moss -	164	8	22	7	-	-	146	230	100	iron.
1,866	45,658	Any -	-	-	ditto	-	"	P. L. Henderson -	249	2	28	1	13	3	380	604	220	iron.
1,867	29,913	Ruby -	-	-	ditto	-	1865	C. K. Prioleau -	260	1	33	0	15	6	391	900	300	steel.
1,868	29,914	Santiago -	-	-	ditto	-	"	Pacific Steam Navigation Company (Limited)	267	0	40	2	17	6	1,161	1,619	400	iron.
1,870	29,915	Preston Belle -	-	-	ditto	-	"	United Kingdom Screw Colliery Company (Limited).	174	8	25	9	15	3	383	509	80	iron, screw.
1,871	29,916	Pollux -	-	-	ditto	-	"	David Doig -	83	1	18	0	7	3	44	92	30	iron.
1,872	29,917	Castor -	-	-	ditto	-	"	- ditto -	83	2	18	9	7	3	44	92	30	iron.
1,873	29,920	The Queen -	-	-	ditto	-	"	National Steam Navigation Company (Limited)	381	1	42	4	21	2	2,811	3,517	400	iron, screw.
1,874	29,921	Benbow -	-	-	ditto	-	"	M. J. Wilson -	200	0	20	1	16	8	578	739	120	iron, screw.
1,875	29,923	Wren -	-	-	ditto	-	1862	T. C. Gibson -	50	6	13	5	6	4	10	18	20	screw.
1,876	50,476	Ariel -	-	-	ditto	-	1864	C. K. Prioleau -	279	8	35	0	15	0	689	1,132	850	steel.
1,877	29,927	Swansea -	-	-	ditto	-	1865	John Bacon -	151	0	22	5	12	3	235	309	55	iron, screw.
1,878	29,928	Nerbudda -	-	-	ditto	-	"	R. B. Reynolds and another -	260	0	34	3	21	0	969	1,357	250	iron, screw.
1,879	29,932	Matanzas -	-	-	ditto	-	"	S. T. Johnson -	59	4	15	1	5	4	32	38	6	iron, screw.
1,880	29,933	Royal Alfred -	-	-	ditto	-	"	R. H. Brown and others -	127	6	20	0	11	4	82	180	98	iron.
1,881	29,934	Chrysolite -	-	-	ditto	-	"	Henry Fernie -	189	7	28	4	17	2	548	702	100	iron, screw.
1,882	29,936	American -	-	-	ditto	-	"	West India and Pacific Steam Ship Company (Limited).	274	9	34	5	22	3	1,286	1,831	200	iron, screw.
1,883	29,937	Midland -	-	-	ditto	-	"	Richard Jones -	274	1	33	1	15	7	906	1,622	300	steel.
1,884	29,938	Great Northern -	-	-	ditto	-	"	- ditto -	274	0	33	1	15	7	906	1,622	300	steel.
1,885	29,940	Columbus -	-	-	ditto	-	"	Henry Cruse and others -	134	2	20	4	10	6	103	194	100	iron.
1,886	29,942	Plover -	-	-	ditto	-	"	Richard Phillips -	224	3	24	0	11	4	155	410	160	steel.
1,887	29,943	Carlew -	-	-	ditto	-	"	- ditto -	224	3	24	0	11	4	155	409	160	steel.
1,888	29,946	Sasotris -	-	-	ditto	-	"	W. M. Moss and others -	323	8	34	7	25	5	1,608	1,966	200	iron, screw.
1,889	46,528	Bridgewater -	-	-	ditto	-	1863	Liverpool and Dublin Steam Navigation Company (Limited).	228	6	25	2	13	5	420	594	250	iron.
1,890	45,721	Sheffield -	-	-	ditto	-	1864	- ditto -	227	8	26	2	14	2	518	703	240	iron.
1,891	29,949	Heather Bell -	-	-	ditto	-	1865	Wallasey Local Board -	169	8	21	2	9	0	132	205	80	iron.
1,892	29,950	Californian -	-	-	ditto	-	"	West India and Pacific Steam Ship Company (Limited).	274	9	34	5	22	3	1,287	1,832	200	iron, screw.
1,893	29,951	Sapphire -	-	-	ditto	-	"	Henry Fernie -	189	3	28	1	16	7	500	647	100	iron, screw.
1,894	50,371	Ajax -	-	-	ditto	-	1864	Henry Lafone -	170	0	25	7	11	6	203	341	120	iron, screw.
1,895	20,952	Penguin -	-	-	ditto	-	1865	C. K. Prioleau -	249	0	30	1	13	2	339	659	100	steel.
1,896	29,954	Alice -	-	-	ditto	-	"	M. J. Wilson -	217	0	30	0	18	3	703	881	130	iron, screw.
1,897	29,956	Swan -	-	-	ditto	-	"	J. G. Bowdler and another -	230	8	26	0	11	2	315	471	180	steel.
1,898	29,958	Delaware -	-	-	ditto	-	"	C. E. & Alfred Dixon -	321	4	36	1	26	0	1,597	2,042	280	iron, screw.
1,899	29,959	Ironsides -	-	-	ditto	-	"	Channel Steam Ship Company (Limited)	198	8	29	3	16	8	514	691	98	iron, screw.
1,400	29,960	City of Durham -	-	-	ditto	-	"	William Inman -	201	1	28	8	16	6	538	697	120	iron, screw.
1,401	29,965	West Indian -	-	-	ditto	-	"	West India and Pacific Steam Ship Company (Limited).	278	2	34	-	21	0	1,278	1,805	200	iron, screw.
1,402	29,966	European -	-	-	ditto	-	"	- ditto -	260	0	32	0	21	4	1,351	1,685	160	iron, screw.
1,403	29,968	Halley -	-	-	ditto	-	"	W. J. Lamport -	207	8	32	1	21	0	995	1,347	120	iron, screw.
1,404	29,969	Peter Landberg -	-	-	ditto	-	"	W. T. Mann -	152	0	22	0	11	0	185	297	80	iron, screw.
1,405	29,973	Camel -	-	-	ditto	-	"	Andrew Wylie -	120	8	22	1	9	0	125	188	90	iron.
1,406	29,983	Carolina -	-	-	ditto	-	1861	Henry Lafone -	248	8	31	8	19	4	891	1,117	140	iron, screw.

RETURN of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
1,407	44,847	Hilda	Liverpool - 1865	1862	P. L. Henderson	Feet. 10 1/2.	Feet. 10 1/2.	Feet. 10 1/2.	285	435	220	iron.
1,408	29,977	Minerva	ditto - "	1865	John Maylor	206 8	24 2	12 2	325	420	140	iron, screw.
1,409	29,978	Hawk	ditto - "	—	C. H. Bowring	178 5	35 3	10 2	322	283	80	iron, screw.
1,410	29,980	Venezuelan	ditto - "	1865	West India and Pacific Steam Ship Company (Limited).	145 4	25 4	18 0	172	1,682	160	iron, screw.
1,411	29,981	Gipsy Queen	ditto - "	"	Rock Ferry Company (Limited)	259 5	32 1	21 5	1,348			
1,412	29,982	Fairy Queen	ditto - "	"	- ditto							
1,413	29,983	Agnes Jack	ditto - "	"	John Bacon and others	135 0	20 1	7 7	106	149	70	iron.
1,414	29,986	Arago	ditto - "	"	W. J. Lamport and another	135 0	20 1	7 7	106	149	70	iron.
1,415	29,987	Nile	ditto - "	"	W. M. Moss	180 8	26 5	15 8	481	574	70	iron, screw.
1,416	23,593	*Atlas	ditto - "	"	R. J. Neville	220 0	28 2	16 0	685	834	80	iron, screw.
1,417	29,401	Samson	ditto - 1860	1860	C. W. Neville and others	338 0	34 8	25 3	1,942	2,276	180	iron, screw.
1,418	44,106	Leopard	ditto - 1862	1861	Llanelli Steam Navigation Company	74 0	16 5	9 0	6	79	50	iron, screw.
1,419	19,890	Ranger	ditto - 1863	"	W. Bowen	94 2	19 1	9 9	38	111	80	iron, screw.
1,420	29,415	Lily	ditto - "	1857	Evan Davis	91 6	14 9	8 2	42	67	25	iron, screw.
1,421	6,312	Royal Princess	ditto - "	1865	William Bowen	92 3	18 8	9 8	17	98	40	iron, screw.
1,422	5,896	*Post Boy	Lowestoft - 1862	1848	W. B. Roe and others	66 2	11 6	5 1	20	26	10	screw.
1,423	14,737	*Royal Victoria	ditto - 1858	1837	J. O. Lever	102 5	17 7	8 9	37	103	50	iron.
1,424	18,636	*Arab	ditto - "	1835	North of Europe Steam Navigation Company	69 7	11 9	5 8	17	35	16	iron.
1,425	5,892	*Imperial	ditto - 1854	1851	Lowestoft Railway and Harbour Company	187 0	22 8	15 4	438	615	250	iron.
1,426	5,891	*Pursuit	ditto - "	1843	- ditto	130 6	22 5	13 2	131	303	150	iron.
1,427	10,096	*Powerful	ditto - "	1858	J. B. Owen	72 6	14 5	8 7	21	66	28	iron.
1,428	12,602	*Norfolk Hero	Maryport - 1863	1848	W. & T. Joliffe	62 1	14 0	7 7	12	46	20	iron.
1,429	12,603	*Ramblor	ditto - "	1846	Maryport Steam Shipping Company	84 2	18 1	9 0	20	81	40	iron.
1,430	12,601	*Seahouse	ditto - 1855	1854	- ditto	78 3	14 9	8 7	19	65	33	iron.
1,431	18,261	Maryport	ditto - 1859	1858	- ditto	69 9	14 0	8 0	15	55	28	iron.
1,432	19,733	Harriet	Middlebro' - 1861	1857	H. W. F. Bolekow and another	80 3	16 2	9 3	32	95	50	iron, screw.
1,433	28,654	Ann	ditto - "	1860	- ditto	108 0	18 7	9 7	34	122	70	iron, screw.
1,434	19,482	Middleborough	ditto - "	1857	- ditto	199 4	25 1	14 7	401	496	70	iron, screw.
1,435	7,754	Tartar	ditto - "	1853	W. Fallows and others	210 0	28 6	17 5	467	688	130	iron, screw.
1,436	7,318	Firebrand	ditto - "	1847	C. C. Duncan	142 6	20 1	10 9	161	237	40	iron, screw.
1,437	6,383	Commodore	ditto - "	"	F. J. Leach	79 2	16 5	8 0	21	61	30	iron.
1,438	23,741	Belmont	ditto - "	1858	Stockton and Darlington Railway Company	74 9	16 1	8 6	15	60	34	iron.
1,439	4,985	Catherine	ditto - "	1842	George Dixon and another	85 0	16 4	8 7	26	69	40	iron.
1,440	26,957	Little Western	ditto - "	1844	John Wake and another	81 9	17 0	9 0	19	73	35	iron.
1,441	6,234	Jane and Phoebe	ditto - "	1862	Stockton and Darlington Railway Company	71 3	13 0	6 1	14	33	16	iron.
1,442	29,483	River Queen	ditto - "	1861	William Duncan and others	77 4	11 6	6 1	12	32	14	iron.
1,443	16,220	Ironmaster	ditto - "	1856	H. W. F. Bolekow and another	72 7	15 9	8 2	13	50	35	iron.
1,444	29,484	River King	ditto - 1862	1862	C. C. Duncan and others	95 1	15 2	6 4	46	65	20	iron.
						178 5	24 5	13 0	268	394	80	iron, screw.
						91 6	14 0	7 2	32	59	19	iron.

1,445	19,878	Walker	ditto	1857	Joseph Dodds	88	0	16	3	8	8	14	66	30
1,446	45,141	Confidence	ditto	1862	John Askew	98	8	18	4	9	1	37	103	50
1,447	45,142	Integrity	ditto	"	John Sharpe and another	81	4	16	4	8	9	22	69	38
1,448	2,476	Pilot	ditto	"	Francis Sill	68	4	15	6	8	2	12	47	38
1,449	45,143	Progress	ditto	1863	Corporation of Middlesbro'	51	0	14	8	3	7	8	19	12
1,450	45,144	Gladstone	ditto	"	J. W. Pease and others	207	6	28	5	14	2	506	650	110
1,451	45,145	Fearless	ditto	"	E. T. Hankey	82	6	17	2	8	3	27	75	30
1,452	9,775	Cardinal Wolsey	ditto	"	W. Duncan and others	104	1	12	1	5	8	31	44	20
1,453	47,053	Champion	ditto	"	George Dixon	93	1	14	6	6	6	23	48	25
1,454	47,056	Confidence	ditto	1864	F. J. Leach	97	3	18	1	9	1	28	91	50
1,455	47,059	Eston Nab	ditto	"	H. W. F. Bolckow and another	96	8	17	1	8	3	63	92	30
1,456	47,060	Nelly	ditto	"	Thomas Vaughan	95	4	12	2	6	3	26	50	26
1,457	49,684	Gleaner	ditto	"	John Sharp and another	81	7	17	3	8	9	23	72	30
1,458	49,687	Swan	ditto	"	W. Fallows and others	86	6	16	5	8	9	21	73	34
1,459	49,688	Arrow	ditto	"	F. J. Leach	91	3	18	1	9	1	25	85	60
1,460	49,689	Emperor	ditto	1865	- ditto	106	7	18	8	9	4	43	118	50
1,461	49,690	Admiral	ditto	"	W. Fallows and others	93	2	17	2	9	0	26	82	40
1,462	53,012	Nelly	ditto	"	Thomas Vaughan	114	2	15	1	7	0	57	91	26
1,463	53,018	Meteor	ditto	"	Edmund Backhouse	204	7	27	5	15	7	439	629	90
1,464	27,689	Pembrokeshire	Milford	1864	Thomas Jackson	71	8	15	4	7	5	28	41	24
1,465	-	*Ann and Jane	Newcastle	1825	John Johnston	67	6in.	16	11in.	9	lin.	27	-	-
1,466	-	*Majestic	ditto	1826	Robert Johnston and others	52	2in.	14	8in.	7	11in.	21	-	-
1,467	-	*Ocean	ditto	1884	William Innis and another	57	10in.	12	4in.	6	0	18	-	-
1,468	11,894	*John and William	ditto	1886	George Cooper and others	70	8	14	5	8	2	23	64	30
1,469	-	*X. L.	ditto	1827	Ralph Wilson	44	6in.	11	0	6	4in.	11	-	-
1,470	-	*Prince Albert	ditto	1842	Thomas Ellis	66	2	13	4	7	8	15	52	-
1,471	7,267	*Laurel	ditto	1843	Matthew Harrison and another	70	0	11	7	6	1	19	38	15
1,472	-	*Martello	ditto	"	Campbell & Co.	71	0	12	2	6	2	19	41	-
1,473	-	*William and Mary	ditto	"	William Tase	73	7	15	6	8	7	26	76	-
1,474	-	*Don	ditto	1845	John Wilson	59	5	12	7	7	0	13	37	-
1,475	-	*Admiral	ditto	"	Anthony Strong and others	73	3	16	0	8	7	23	76	-
1,476	-	*Mary	ditto	"	William Brown and others	62	3	12	4	6	8	11	32	-
1,477	7,627	*Joseph and William	ditto	1845	William Burrell	63	7	12	7	7	9	14	45	20
1,478	-	*Ranger	ditto	"	Anthony Strong	83	4	17	2	9	3	20	92	-
1,479	4,999	*Margaret	ditto	1847	John Forster and another	55	7	12	8	6	9	13	37	20
1,480	22,565	*Industry	ditto	1852	George Reed	71	7	13	3	7	4	10	42	-
1,481	26,276	*John Bowes	ditto	1853	C. M. Palmer and others	148	9	25	7	15	6	375	486	70
1,482	1,970	*Blessing	ditto	1854	William Heads	59	9	13	7	7	7	12	47	-
1,483	22,606	*Waterman	ditto	1854	J. & R. Stark	65	3	13	4	7	3	11	37	18
1,484	30,417	*Victoria	ditto	1855	William Smith	119	4	22	2	14	0	78	274	180
1,485	22,602	Lord Raglan	ditto	"	Tyne Steam Shipping Company (Limited)	190	3	27	1	13	9	351	516	86
1,486	22,965	Carbon	ditto	"	Thomas Headley and others	174	7	27	6	19	0	399	587	80
1,487	3,279	Otter	ditto	"	Tyne Steam Shipping Company (Limited)	188	2	25	0	15	7	322	478	80
1,488	7,269	Olive	ditto	1856	John Swanston and others	75	4	13	8	6	7	14	39	18
1,489	14,503	Alma	ditto	"	R. Moore	73	0	13	9	7	0	12	41	20
1,490	14,506	Blaydon	ditto	"	Cowan & Douglas	72	9	14	4	7	6	10	45	20
1,491	12,908	Wards	ditto	1857	Robert Redhead and another	77	7	15	1	8	1	12	54	25
1,492	15,650	Jarrow	ditto	"	C. M. Palmer	91	4	15	4	7	0	25	63	30
1,493	7,255	William Cargill	ditto	1850	Croze & Archer	67	5	12	5	7	1	10	35	15

Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	—
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
1,434	20,255	Felling	Newcastle - 1857	1857	Jonathan Hall and others	Fect. 104½.	Fect. 10½.	Fect. 10½.	11	40	20	
1,495	20,256	Bonnie Dundee	ditto - "	"	James Armour	69 2	13 7	7 6	11	40	20	
1,466	20,741	Sir Colin Campbell	ditto - 1858	1858	G. R. Turnbull and another	71 8	14 7	7 7	10	41	24	
1,497	20,742	British Queen	ditto - "	"	Robert Turnbull	73 8	14 9	7 0	13	47	22	
1,498	20,744	Mystery	ditto - "	"	William Brown and others	63 0	15 7	7 4	16	50	18	
1,499	2,072	Honor	ditto - "	"	John Lakey	74 4	14 7	7 8	10	50	21	
1,500	21,289	Lomonosoff	ditto - "	"	Thomas Henderson	69 4	13 9	7 0	11	38	18	
1,501	21,290	Edward Hawkins	ditto - "	"	Thomas Hodgson and others	109 4	19 9	10 0	63	122	60	iron.
1,502	26,875	Rosamond	ditto - 1859	"	John Batey and others	227 5	32 0	17 5	798	968	90	iron, screw.
1,503	26,876	Pasha	ditto - "	"	Sir Samuel Cunard, Bart.	71 7	14 5	7 0	12	47	21	
1,504	26,877	Towneley	ditto - "	"	Addison, Potter, and others	92 0	25 3	8 4	99	179	25	iron, screw.
1,505	26,878	Boston	ditto - "	"	J. D. Bootiman and others	66 1	14 1	6 6	13	43	26	iron.
1,506	27,896	Cygnat	ditto - "	"	Charles Lodge	71 0	14 3	7 7	12	47	24	
1,507	27,897	Dart	ditto - "	"	Thompson, Hutchinson, and another	70 0	14 2	7 0	10	43	20	
1,508	28,315	Pilot	ditto - 1860	1849	T. B. Callenan and another	71 1	13 9	6 8	9	36	18	
1,509	28,323	Garibaldi	ditto - "	"	Tyne General Ferry Company	82 4	16 3	8 9	19	67	30	
1,510	27,898	Onward	ditto - "	"	William Armstrong	89 6	16 0	5 6	44	71	20	iron.
1,511	22,618	Forrester	ditto - "	"	John Dobson and another	76 2	15 3	8 1	11	55	25	
1,512	29,105	Mary	ditto - "	"	John Lakey and others	75 0	13 0	6 0	11	37	18	
1,513	19,385	Scottish Maid	ditto - "	"	Charles Stein	71 4	14 2	7 6	17	45	30	
1,514	29,108	North Star	ditto - 1861	1860	Henry Carr	76 1	15 7	8 2	12	56	26	
1,515	29,114	Harry Clasper	ditto - "	"	Tyne General Ferry Company	74 0	15 6	8 0	18	54	25	iron.
1,516	2,174	Saint Clare	ditto - "	"	Robert Forster	115 6	16 7	7 5	70	103	40	
1,517	29,119	Punch	ditto - "	"	Tyne General Ferry Company	70 0	18 9	7 0	11	36	18	
1,518	29,121	Anthony Nichol	ditto - "	"	Robert Forster	60 8	15 4	5 7	20	37	20	
1,519	26,963	Express	ditto - "	"	Thomas Thompson and others	71 5	15 3	7 7	14	45	21	
1,520	29,122	Percy	ditto - "	"	Robert Tait and others	72 3	18 3	6 5	10	35	18	
1,521	43,591	Alderman Ridley	ditto - "	"	Dennis Cunningham	68 8	12 5	6 8	10	33	18	
1,522	29,116	Patriot	ditto - "	"	Coleraine Town Commissioners	75 1	15 3	8 4	17	54	74	
1,523	43,595	Wansbeck	ditto - "	"	Hogg & Company	71 7	15 2	7 6	14	44	21	
1,524	3,620	Chevy Chase	ditto - "	"	Tyne General Ferry Company	97 5	16 3	5 6	37	56	30	iron.
1,525	22,574	Elba	ditto - "	"	Tyne Steam Shipping Company	161 9	24 1	13 0	254	332	80	iron, screw.
1,526	43,597	Briton	ditto - "	"	General Steam Navigation Company	200 5	28 0	16 5	448	660	80	iron, screw.
1,527	43,598	Prince of Wales	ditto - "	"	Robert Moore	71 8	14 6	7 2	14	41	70	iron, screw.
1,528	10,170	Chesapeake	ditto - 1862	"	Charles Carr	75 3	15 3	8 1	15	50	22	iron.
1,529	2,477	Collingwood	ditto - "	"	John Rogerson	74 8	15 2	8 2	40	64	25	
1,530	43,611	Tynemouth	ditto - "	"	Robert Redhead and another	56 6	13 7	6 7	9	29	14	
1,531	43,612	Montrose	ditto - "	"	Tyne General Ferry Company	94 0	14 2	6 2	38	49	20	
1,533	43,613	Mary Jane	ditto - "	"	John and Francis Batey	73 3	16 2	7 8	19	51	20	
			ditto - "	"	Tyne General Ferry Company	94 0	14 3	6 2	34	49	24	iron.

[illegible]

RETURN of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
1,581	51,356	Busy Bee	Newcastle -	1865	W. D. Stephens -	Feet. 10ths.	Feet. 10ths.	Feet. 10ths.	598	771	99	iron, screw.
1,582	51,358	Magna Charta	ditto	"	John Joicey and others	202 1	28 2	17 0	592	764	90	iron, screw.
1,583	51,357	New Pelton	ditto	"	Richard Cory and others	201 7	28 5	17 5	488	630	80	iron, screw.
1,584	51,360	John Edwin	ditto	"	Tyne General Ferry Company	180 4	28 0	17 1	36	51	20	iron.
1,585	51,362	Earl Percy	ditto	"	- ditto	95 8	13 9	6 5	573	715	120	iron, screw.
1,586	51,365	Wentworth	ditto	"	T. E. Smith and others	212 0	28 2	13 0	277	352	48	iron, screw.
1,587	51,368	Mary Nixon	ditto	"	John Nixon and another	148 0	24 7	13 2	587	768	90	iron, screw.
1,588	51,366	Saint Oswin	ditto	"	James Hall and others	201 0	28 0	17 4	624	780	95	iron, screw.
1,589	51,369	Archimedes	ditto	"	Edmond Crawshaw and others	210 8	28 0	17 5	882	1,086	140	iron, screw.
1,590	51,367	Charles Mitchell	ditto	"	John Straker and others	239 9	32 8	17 3	597	738	90	iron, screw.
1,591	51,370	Wrecker	ditto	"	William Rogerson	205 4	28 3	16 6	52	65	10	iron, screw.
1,592	51,374	Grenadier	ditto	"	Tyne Steam Shipping Company (Limited)	75 2	18 0	6 9	669	712	120	iron, screw.
1,593	51,371	Sarah Rogerson	ditto	"	Tyne General Ferry Company	211 4	28 0	13 0	36	51	20	iron.
1,594	8,693	Robert and Jane	ditto	"	Robert Marson	95 8	13 9	6 5	10	28	15	iron, screw.
1,595	51,377	Dudley	ditto	1847	T. E. Smith and others	67 5	12 7	6 1	536	696	90	iron, screw.
1,596	29,735	Wizard	ditto	1865	William Brown and others	198 0	28 0	16 0	15	55	25	iron, screw.
1,597	51,379	Huscar	ditto	1861	Tyne Steam Shipping Company (Limited)	71 7	15 5	8 5	33	87	50	iron, screw.
1,598	51,380	Fairwater	ditto	"	C. A. Schlesinger and another	94 4	17 9	9 4	299	384	65	iron, screw.
1,599	45,651	Sussex	ditto	"	London, Brighton, and South Coast Railway Company.	148 8	24 6	14 6	93	135	32	iron, screw.
			Newhaven	1862		110 0	17 8	9 9				
1,600	45,652	Normandy	ditto	1863	- ditto	112 6	17 9	10 2	107	149	82	iron, screw.
1,601	50,311	Marseilles	ditto	1864	- ditto	213 9	23 4	11 3	296	394	180	iron.
1,602	16,992	Orleans	ditto	"	- ditto	187 2	21 6	9 9	188	270	160	iron.
1,603	16,991	Lyons	ditto	1856	- ditto	189 2	21 8	9 9	189	269	160	iron.
1,604	50,314	Bordeaux	ditto	1865	- ditto	214 0	23 7	10 8	293	419	200	iron.
1,605	10,691	*Phoenix	Newport	1861	Charles Hall	83 9	15 7	9 2	36	92	50	iron, screw.
1,606	13,002	Carrs	ditto	1865	Samuel Hornfray	72 5	13 9	7 7	19	54	35	iron, screw.
1,607	26,800	Thomas Powell	ditto	1855	W. J. Kingsbury and others	161 6	25 5	14 6	272	401	70	iron, screw.
1,608	49,697	Isca	ditto	1866	Aun Burton and another	82 8	16 0	7 3	52	65	20	iron, screw.
1,609	13,864	Duke of Buccleuch	Penancee	1864	James Bennett	77 1	13 3	7 8	20	49	15	iron, screw.
1,610	5,734	*Queen	Plymouth -	1846	Devon and Cornwall Tamar Steam Packet Company (Limited).	68 5	13 5	7 0	29	52	28	
1,611	5,669	*Lord Yarborough	ditto	1852	James Blackmore and others	86 2	12 3	9 3	36	79	60	
1,612	5,722	Gipsy	ditto	1855	St. Germans and Saltash Steam-boat Company	72 0	12 2	6 5	29	46	22	iron.
1,613	28,310	Emperor	ditto	1856	Devon and Cornwall Tamar Steam Packet Company (Limited).	89 1	14 0	6 9	46	73	32	iron.
1,614	19,786	Fairy	ditto	1857	St. Germans and Saltash Steam-boat Company	98 9	14 4	6 0	37	59	40	
1,615	16,975	Willington	ditto	"	Devon and Cornwall Tamar Steam Packet Company (Limited).	84 0	17 0	9 2	13	75	40	

1,616	13,861	Earl of Malmesbury -	ditto	-	1858	1825	Earl of Mount Edgembe -	-	-	-	107	4	17	2	9	7	59	109	50
1,617	9,066	Mystery -	ditto	-	1859	1846	W. S. Andrews -	-	-	-	78	5	11	0	7	0	24	36	40
1,618	21,528	Princess -	ditto	-	1861	1844	Devon and Cornwall Tamar Steam-boat Com- pany (Limited).	-	-	-	110	5	14	0	7	5	44	69	40
1,619	44,334	Volunteer -	ditto	-	1862	1862	Robinson Ridley -	-	-	-	86	2	16	3	7	1	31	59	45
1,620	13,941	Contractor -	ditto	-	1863	1849	H. Lee and another -	-	-	-	85	9	16	7	9	5	35	85	40
1,621	53,053	Aerial -	ditto	-	1865	1865	Tamar and Tavy Steam Ship Company (Li- mited).	-	-	-	116	0	14	1	4	0	31	43	26
1,622	13,271	Purbeck -	Poole	-	1860	1850	W. J. Pike and another -	-	-	-	72	0	13	0	6	7	22	47	20
1,623	44,286	Royal Albert -	ditto	-	1864	1862	Charlotte Fayle -	-	-	-	78	4	16	5	8	5	9	58	30
1,624	19,683	Her Majesty -	Portsmouth	-	1851	1850	Portsmouth and Ryde Steam Packet Company	-	-	-	129	1	14	0	7	2	49	75	40
1,625	19,987	*Princess Royal -	ditto	-	"	"	-	-	-	-	107	6	13	2	8	3	57	87	40
1,626	19,684	*Prince of Wales -	ditto	-	"	"	-	-	-	-	107	6	13	2	8	3	57	87	40
1,627	19,985	*Prince Albert -	ditto	-	"	"	-	-	-	-	96	0	12	4	8	1	46	67	50
1,628	19,080	*Ranger -	ditto	-	1863	1851	William Ray -	-	-	-	72	5	14	8	8	6	22	44	35
1,629	27,721	Prince Consort -	ditto	-	1859	1859	Portsmouth and Ryde United Steam Packet Company.	-	-	-	154	5	15	1	6	7	65	104	60
1,630	19,412	Monarch -	ditto	-	1862	1835	E. T. Frazer -	-	-	-	68	0	14	4	7	6	9	48	28
1,631	16,161	Isabella -	ditto	-	1864	1856	J. T. Crampton -	-	-	-	76	2	15	5	8	6	9	58	30
1,632	48,894	Princess of Wales -	ditto	-	1865	1865	Portsmouth and Ryde United Steam Packet Company (Limited).	-	-	-	140	0	16	0	6	9	79	114	50
1,633	17,230	Prince of Wales -	Preston	-	1843	1842	Frederick Kemp and others -	-	-	-	159	6	24	6	13	5	279	466	260
1,634	19,448	Lily -	ditto	-	1852	1839	Alsop & Smith -	-	-	-	82	6	13	2	8	0	50	76	34
1,635	14,932	Alice -	ditto	-	"	1843	J. C. Smith -	-	-	-	66	0	13	0	6	9	10	34	16
1,636	45,671	Minnow -	ditto	-	1864	1858	William Allsup -	-	-	-	119	8	14	3	7	0	43	68	40
1,637	45,672	Kate -	ditto	-	"	1861	Andrew Leighton -	-	-	-	37	0	8	8	4	6	6	10	10
1,638	26,142	Jabez Bunting -	ditto	-	1865	1849	William Allsup -	-	-	-	73	4	16	0	-	-	24	61	35
1,639	19,965	*Stour -	Ramsgate	-	1848	1848	Corporation of Sandwich	-	-	-	57	8	12	5	6	3	10	31	19
1,640	9,410	Lee -	Rochester	-	1840	1840	William Lee -	-	-	-	89	4	16	8	6	2	46	71	24
1,641	20,086	City of Rochester -	ditto	-	1849	1849	Giles & Boucher	-	-	-	133	0	14	0	7	7	46	73	40
1,642	25,451	*Alma -	ditto	-	1855	1855	-	-	-	-	118	4	12	7	6	6	48	69	32
1,643	14,882	Don -	ditto	-	1862	1851	-	-	-	-	76	4	15	2	7	9	18	54	30
1,644	18,053	Lass o' Gowrie -	ditto	-	1862	1856	W. W. Ford -	-	-	-	79	6	16	7	3	0	12	65	27
1,645	45,514	Gazelle -	ditto	-	1863	1860	W. Haymen -	-	-	-	47	3	6	7	3	0	5	9	16
1,646	20,230	*Erin -	Rye -	-	1864	1851	Commissioners of Rye Harbour	-	-	-	74	5	13	4	7	3	21	52	28
1,647	3,950	Queen -	St. Ives	-	1852	1852	Bristol and Hayle Steam Packet Company	-	-	-	158	6	21	2½	11	3	178	295	160
1,648	45,490	Superb -	Scarborough	-	1864	1853	James Swallow and others -	-	-	-	102	6	18	2½	9	4	44	108	55
1,649	45,493	Lady Londesborough -	ditto	-	"	1857	-	-	-	-	97	7	17	9	9	3	53	102	60
1,650	44,310	Kate -	ditto	-	1865	1862	Harcourt Johnstone and others	-	-	-	73	2	16	0	8	5	16	40	32
1,651	19,050	Little Western -	Scilly	-	1868	1858	T. J. Buxton and others -	-	-	-	115	9	18	6	9	4	67	115	35
1,652	14,672	*Waterston -	Shields	-	1848	1848	E. M. Matthews -	-	-	-	66	3	13	4	8	1	16	61	23
1,653	7,650	*Morleys -	ditto	-	1849	1827	Jonas Dial -	-	-	-	59	8	12	2	7	2	19	46	16
1,654	2,449	*Britannia -	ditto	-	"	1849	Pearson & Co. -	-	-	-	71	4	14	8	8	5	19	63	30
1,655	4,989	*Northumberland -	ditto	-	1850	1837	North and South Shields Ferry Company	-	-	-	65	9	16	6	8	4	18	74	33
1,656	2,443	*Blyth -	ditto	-	1851	1851	W. J. Sydney and another -	-	-	-	71	0	14	8	8	3	23	63	26
1,657	26,138	*Victory -	ditto	-	"	"	John Plets -	-	-	-	78	3	15	8	8	8	23	77	36
1,658	2,020	*Grace Darling -	ditto	-	"	"	William Cowry -	-	-	-	61	6	10	9	6	4	11	28	12
1,659	10,168	*Conqueror -	ditto	-	"	"	William Hall -	-	-	-	75	0	14	5	8	7	25	69	30
1,660	40,171	*Tam O'Shanter -	ditto	-	"	"	Robert Chirholm	-	-	-	74	8	14	6	8	9	19	66	30

RETURN of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.	
1,661	13,109	*Vigilant -	Shields -	1852	1851	78 0	16 2	Feet. 10ft. 9 1	33	89	50
1,662	-	*Henry Wright -	ditto -	"	1852	98 8	18 0	9 7	42	113	50
1,663	7,643	*Roberts and Ann -	ditto -	"	1843	66 2	14 3	8 0	18	57	26
1,664	26,110	*Welcome -	ditto -	"	1847	67 2	14 4	8 1	14	55	29
1,665	10,174	*Avenger -	ditto -	1853	1848	75 9	14 9	8 8	22	54	-
1,666	15,239	*John Lee -	ditto -	"	1847	60 0	12 9	7 1	10	36	18
1,667	7,633	*Test -	ditto -	"	1855	79 5	15 5	9 2	31	82	35
1,668	10,179	*Economy -	ditto -	"	1849	65 0	13 8	7 3	17	51	26
1,669	4,963	*Margaret and Mary -	ditto -	"	1837	57 8	14 1	7 2	14	43	20
1,670	10,169	*Jubilee -	ditto -	1854	1847	66 4	13 6	8 1	14	49	22
1,671	10,166	*Lees -	ditto -	"	1853	73 0	14 3	8 5	21	62	25
1,672	10,165	*Harmony -	ditto -	"	1847	66 1	13 2	8 0	14	48	20
1,673	2,083	*Brilliant -	ditto -	"	1849	62 3	12 3	7 0	14	38	13
1,674	7,645	*Albion -	ditto -	"	1849	69 8	12 3	8 2	18	59	25
1,675	2,430	*Netherton -	ditto -	"	1852	60 5	13 8	7 3	13	45	20
1,676	-	*Queen -	ditto -	1854	1838	81 2	13 6	7 4	63	83	-
1,677	15,258	*Active -	ditto -	"	1836	63 3	13 6	7 5	13	48	25
1,678	2,038	*Rob Roy -	ditto -	1855	1856	73 2	13 3	7 5	20	50	20
1,679	2,166	Brothers -	ditto -	"	"	82 0	16 0	8 0	28	81	35
1,680	2,115	William and Mary -	ditto -	"	"	71 2	14 6	7 5	21	54	20
1,681	2,155	British Warrior -	ditto -	"	"	76 3	15 0	8 1	27	65	26
1,682	22,641	Princess -	ditto -	1841	1841	72 6	12 4	6 7	15	41	16
1,683	7,630	General Pelissier -	ditto -	1856	1856	89 0	18 0	9 0	19	89	55
1,684	15,260	Sir George Grey -	ditto -	"	1856	84 0	16 0	9 0	49	78	40
1,685	17,044	Expert -	ditto -	"	"	75 2	15 3	8 0	10	52	25
1,686	17,043	Enterprise -	ditto -	"	"	80 8	15 5	8 0	10	60	30
1,687	17,058	Apollo -	ditto -	"	"	78 6	15 9	9 5	17	63	30
1,688	18,059	Earl Percy -	ditto -	1857	1857	81 0	16 0	8 7	13	63	30
1,689	10,106	Thomas and Mary -	ditto -	"	"	83 7	17 6	9 3	12	77	43
1,690	12,597	Telegraph -	ditto -	"	"	79 5	16 8	8 0	13	62	30
1,691	13,313	Restless -	ditto -	"	"	81 4	16 8	8 0	17	68	30
1,692	13,315	Alacrity -	ditto -	"	"	75 8	15 0	8 0	11	56	26
1,693	14,958	Chanticleer -	ditto -	"	"	75 8	16 0	8 4	12	54	25
1,694	15,992	Bees -	ditto -	"	"	77 0	16 0	8 0	9	62	28
1,695	15,999	Gosforth -	ditto -	"	"	75 8	14 9	7 0	13	52	26
1,696	19,394	Lass o' Gowrie -	ditto -	"	"	80 9	16 0	8 5	14	63	30
1,697	19,399	Fury -	ditto -	"	"	80 7	17 1	9 0	16	69	30
1,698	8,915	Goliath -	ditto -	1854	1854	80 5	16 9	8 8	13	64	33
1,699	20,438	Lion -	ditto -	1858	1858	85 4	16 0	9 0	17	76	37

1,700	16,791	Tyne	-	-	-	ditto	"	1857	William Thorpe	-	-	-	-	84	0	16	3	8	6	11	68	35
1,701	21,452	Life Guard	-	-	-	ditto	"	1858	John Robson	-	-	-	-	79	7	16	2	8	0	12	60	29
1,702	21,457	Champion	-	-	-	ditto	"	"	J. R. Lawson	-	-	-	-	79	6	15	8	8	7	18	61	30
1,703	21,458	Bull Dog	-	-	-	ditto	"	"	R. Russell and others	-	-	-	-	78	9	16	1	8	5	13	61	30
1,704	21,740	Amelia	-	-	-	ditto	"	"	Thomas Dawson and others	-	-	-	-	82	8	16	4	9	0	16	69	36
1,705	19,681	Chieftain	-	-	-	ditto	"	1850	C. Charlton and another	-	-	-	-	70	3	15	0	8	3	13	47	26
1,706	22,668	Imperial Prince	-	-	-	ditto	"	1858	George Chisholm and another	-	-	-	-	80	0	16	0	9	5	16	63	25
1,707	22,673	Victoria	-	-	-	ditto	"	1859	William Catt	-	-	-	-	81	5	16	5	9	0	16	66	30
1,708	27,351	Echo	-	-	-	ditto	"	"	William Gibson	-	-	-	-	81	6	16	0	8	0	14	66	30
1,709	27,358	Pilot	-	-	-	ditto	"	"	Robert Gray and others	-	-	-	-	86	9	18	5	9	0	21	83	38
1,710	27,359	Vixen	-	-	-	ditto	"	"	W. Stephenson, junior, and others	-	-	-	-	81	2	16	0	9	1	19	66	30
1,711	27,370	Robert Pow	-	-	-	ditto	"	"	Henry Gibson and others	-	-	-	-	85	8	16	7	8	0	19	68	30
1,712	27,700	Samson	-	-	-	ditto	"	"	William Milburn and others	-	-	-	-	81	9	18	3	9	0	18	68	35
1,713	27,702	John Usher	-	-	-	ditto	"	"	Joseph Ostens and another	-	-	-	-	85	0	17	3	9	0	23	74	35
1,714	27,704	Liberty	-	-	-	ditto	"	"	Thomas Vardy and another	-	-	-	-	80	3	14	9	8	0	20	57	30
1,715	27,713	J. P. Almond	-	-	-	ditto	"	"	Thomas Crawford	-	-	-	-	76	6	15	6	8	0	16	57	25
1,716	27,715	Vigilant	-	-	-	ditto	"	"	George Stephenson and another	-	-	-	-	77	0	16	1	9	0	14	56	25
1,717	28,571	Blue Jacket	-	-	-	ditto	"	"	James Mouat	-	-	-	-	85	7	17	4	9	0	23	76	40
1,718	28,572	Hope	-	-	-	ditto	"	"	Thomas Smith	-	-	-	-	68	5	14	5	7	0	15	26	20
1,719	28,576	Home	-	-	-	ditto	"	"	John Armstrong	-	-	-	-	79	4	15	7	8	0	15	58	26
1,720	28,588	Tynemouth	-	-	-	ditto	"	"	William Joplin and others	-	-	-	-	75	0	14	8	7	0	12	46	25
1,721	4,978	Hercules	-	-	-	ditto	"	1846	William Minto and others	-	-	-	-	74	2	16	2	8	3	10	53	25
1,722	2,996	Engineer	-	-	-	ditto	"	1853	J. W. Robson	-	-	-	-	72	3	14	5	7	9	12	46	24
1,723	29,703	Northern Light	-	-	-	ditto	"	1861	John Bewick and others	-	-	-	-	92	8	17	7	9	5	33	92	38
1,724	29,708	Renard	-	-	-	ditto	"	"	George Wharrier and another	-	-	-	-	81	0	16	6	9	1	22	68	29
1,725	19,384	Gipsy Queen	-	-	-	ditto	"	1857	Philip Clendon	-	-	-	-	74	5	15	2	7	8	11	47	24
1,726	4,996	Onyx	-	-	-	ditto	"	1847	Anthony Potts	-	-	-	-	68	6	14	5	7	9	13	44	24
1,727	27,865	Rapid	-	-	-	ditto	"	1859	Robert Gray and others	-	-	-	-	78	0	15	6	8	5	15	56	28
1,728	29,717	British Hero	-	-	-	ditto	"	1861	Joseph Watson and others	-	-	-	-	79	5	16	9	8	8	18	64	28
1,729	29,727	Robert Burns	-	-	-	ditto	"	"	C. O. Young and others	-	-	-	-	76	4	16	7	9	1	21	71	29
1,730	44,283	Sunbeam	-	-	-	ditto	"	1862	Benjamin Pearson and another	-	-	-	-	76	5	10	1	8	3	15	42	25
1,731	2,311	Lion	-	-	-	ditto	"	1862	Thomas Legg	-	-	-	-	66	1	15	0	8	0	9	45	22
1,732	44,297	Britannia	-	-	-	ditto	"	"	William Reveley and others	-	-	-	-	78	5	16	4	9	1	18	65	29
1,733	44,296	Great Extended	-	-	-	ditto	"	1862	Robert Forster and others	-	-	-	-	80	9	16	4	8	8	28	70	28
1,734	44,306	Warrior	-	-	-	ditto	"	"	Robert Thompson and others	-	-	-	-	78	5	16	5	8	6	20	68	26
1,735	10,161	Hecla	-	-	-	ditto	"	1854	Peter Cunningham	-	-	-	-	72	7	15	1	8	0	18	54	30
1,736	44,313	Marsaille	-	-	-	ditto	"	1862	Alexander Collie	-	-	-	-	84	7	17	8	9	4	30	83	36
1,737	26,135	Messenger	-	-	-	ditto	"	1843	John Gray	-	-	-	-	71	5	15	7	8	0	10	55	25
1,738	12,688	Sir Walter Scott	-	-	-	ditto	"	1857	D. Solater	-	-	-	-	72	2	16	4	8	0	16	50	30
1,739	45,597	Pioneer	-	-	-	ditto	"	1863	H. Jobs and another	-	-	-	-	76	8	16	6	8	4	19	57	24
1,740	45,602	Excelsior	-	-	-	ditto	"	"	G. Oyston and others	-	-	-	-	82	0	17	3	8	9	24	73	30
1,741	46,608	Bob Chambers	-	-	-	ditto	"	"	Henry Newbolt and another	-	-	-	-	99	9	17	7	9	0	38	86	35
1,742	45,607	Renown	-	-	-	ditto	"	"	Thomas Hunter and another	-	-	-	-	85	6	17	5	9	5	96	88	45
1,743	6,911	Elswick	-	-	-	ditto	"	"	J. Gray	-	-	-	-	71	6	15	5	8	0	11	48	20
1,744	45,616	Tyne	-	-	-	ditto	"	1848	H. Taylor and others	-	-	-	-	180	3	27	3	15	7	452	569	70
1,745	26,950	Wonder	-	-	-	ditto	"	1863	James Stoker	-	-	-	-	74	6	14	7	7	8	10	47	25
1,746	28,589	Northumberland	-	-	-	ditto	"	1854	Tyne Improvement Commissioners	-	-	-	-	82	9	28	4	7	5	41	103	37
1,747	29,721	Percy	-	-	-	ditto	"	1861	- ditto	-	-	-	-	59	5	16	0	6	0	12	35	18
1,748	24,414	Favorite	-	-	-	ditto	"	1828	- ditto	-	-	-	-	54	3	13	0	6	1	5	24	9

Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	
					Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
1,749	Ganges -	Shields -	1863	P. Clendon -	81 8	16 9	9 1	16	89	35	iron, screw.
1,750	John Hutton -	ditto -	1864	A. Strong and others -	70 6	14 3	7 0	6	42	20	
1,751	Tyne -	ditto -	1860	Tyne Improvement Commissioners -	76 8	22 2	8 0	29	90	36	
1,752	Durham -	ditto -	1880	- ditto -	70 0	27 8	8 3	21	72	32	
1,753	Wilberforce -	ditto -	1868	C. O. Young and others -	82 4	16 9	9 0	20	72	30	
1,754	Rapid -	ditto -	1864	John Heads and another -	82 0	17 1	9 3	19	74	31	
1,755	Chip Chase -	ditto -	"	Hugh Taylor and others -	181 3	27 0	15 6	428	540	70	
1,756	Mariner -	ditto -	"	George Stokel and another -	84 8	16 3	8 9	24	70	30	
1,757	Venture -	ditto -	1868	Robert Brown and another -	76 7	15 0	8 4	9	52	27	
1,758	Rover -	ditto -	1861	William Brown -	90 0	18 6	9 3	29	91	50	
1,759	Jonathan Blacklock -	ditto -	1864	J. Blacklock and others -	81 2	17 5	9 1½	22	76	31	
1,760	Effort -	ditto -	1862	Thomas Dixon -	70 7	14 5	7 6½	14	44	18	
1,761	Lightning -	ditto -	1864	John Bewick and another -	90 2	18 4	9 1	27	85	40	
1,762	Favourite -	ditto -	1860	James Dodds -	70 5	14 7	7 6	10	42	25	
1,763	Pearl -	ditto -	1862	Henry Procter and others -	81 4	17 4	9 1	21	74	31	iron, screw.
1,764	Normanby -	ditto -	1865	T. B. Morton -	161 6	22 8	18 2	245	814	50	
1,765	Empress -	ditto -	1865	William Bengall and others -	89 4	18 1	9 4	30	91	36	
1,766	Victoria -	ditto -	"	Michael Wheldon and others -	87 2	18 5	9 4	24	85	35	
1,767	Robert Burns -	ditto -	"	Andrew Bain -	86 6	18 5	9 4	27	86	35	
1,768	Privateer -	ditto -	"	Joseph Osteus and another -	89 0	18 0	9 0	28	89	35	
1,769	Rock Light -	ditto -	"	John Heads and others -	127 0	20 0	11 4	88	181	86	iron.
1,770	Prudhoe -	ditto -	"	Robert Spence and others -	88 2	18 1	9 0	30	88	37	
1,771	Robin Hood -	ditto -	"	C. O. Young and others -	85 6	17 8	8 8	26	82	35	iron.
1,772	Contest -	ditto -	1866	William Minto -	77 5	16 6	8 8	14	64	30	
1,773	Olive Branch -	ditto -	1857	Thomas Stoker -	75 3	15 2	8 0	12	54	26	
1,774	Rambler -	ditto -	1865	William Dodds and another -	76 6	16 1	9 2	15	68	29	
1,775	Perthshire -	ditto -	"	James Oats and others -	74 0	16 4	9 0	14	60	29	
1,776	William -	ditto -	"	Joseph Honeyman -	85 7	17 0	9 2	27	80	34	
1,777	Heather Bell -	ditto -	1861	Alexander Scott and another -	73 4	15 1	7 5	16	45	20	
1,778	Stranger -	ditto -	"	John Harrison and others -	80 0	16 5	9 0	20	67	30	iron.
1,779	Terrible -	ditto -	1865	Joseph Osteus -	117 5	19 3	10 6	63	155	70	
1,780	Walker -	ditto -	"	- ditto -	85 9	18 3	9 0	28	85	34	
1,781	Wilberforce -	ditto -	"	John & George Chisholm -	89 4	18 3	9 4	31	91	35	
1,782	Little John -	ditto -	"	C. O. Young and others -	78 4	17 0	9 0	20	70	35	
1,783	Trump -	Shields, South, 1859	"	Charles Taylor and others -	72 3	15 9	8 6	7	55	30	
1,784	Hellan -	ditto -	1860	Joseph Honeyman -	89 7	16 4	8 7	16	68	30	
1,785	Volunteer -	ditto -	1859	J. C. Stevenson and another -	74 4	16 7	8 5	15	67	32	
1,786	Messenger -	ditto -	1861	Robert Hindmarsh and others -	81 7	16 5	8 6	19	62	30	iron.
1,787	Moselle -	ditto -	"	John Green and others -	88 7	18 1	9 8	26	92	40	

19,880	1,788	Paragon -	-	-	-	ditto	-	1862	1857	Robert Scott and others	-	-	-	-	82	2	16	0	8	9	18	65	34
43,631	1,789	Defence -	-	-	-	ditto	-	"	1862	John Hall and others	-	-	-	-	81	8	17	3	8	9	22	69	30
43,636	1,790	Newcastle	-	-	-	ditto	-	"	"	T. F. Bell -	-	-	-	-	195	2	20	6	11	0	169	226	45
28,592	1,791	Cruizer -	-	-	-	ditto	-	"	1861	John Readhead and others	-	-	-	-	86	0	16	9	9	5	28	80	38
43,639	1,792	Spray -	-	-	-	ditto	-	"	1862	J. B. Middleton -	-	-	-	-	71	5	15	0	8	1	16	47	30
43,644	1,793	Pilots -	-	-	-	ditto	-	"	"	Joseph Smith -	-	-	-	-	81	4	16	6	9	0	25	72	28
15,994	1,794	Margaret	-	-	-	ditto	-	1863	1859	A. Whale -	-	-	-	-	69	8	16	0	8	0	10	56	30
43,655	1,795	Prince Alfred	-	-	-	ditto	-	"	1868	John Gibson and others	-	-	-	-	91	0	18	4	9	5	31	92	45
14,388	1,796	Dandy -	-	-	-	ditto	-	"	1867	J. Mount -	-	-	-	-	90	8	17	6	9	3	19	65	45
47,164	1,797	Robert Scott	-	-	-	ditto	-	1864	1863	Robert Scott and others	-	-	-	-	87	4	17	5	9	3	27	85	35
28,348	1,798	Pelaw -	-	-	-	ditto	-	"	1861	John Readhead and others	-	-	-	-	77	8	16	5	8	3	19	60	27
10,138	1,799	Telegraph	-	-	-	ditto	-	"	1862	Robert Todd and another	-	-	-	-	77	6	16	4	8	8	20	66	30
21,274	1,800	Robert Airey	-	-	-	ditto	-	"	1868	John Turner and another	-	-	-	-	80	7	16	9	8	5	15	64	30
19,878	1,801	War Eagle	-	-	-	ditto	-	"	1867	Thomas Forrest and another	-	-	-	-	80	8	16	1	8	8	14	64	30
27,698	1,802	Harkaway	-	-	-	ditto	-	"	1859	C. W. Robson and others	-	-	-	-	83	0	16	9	8	7	21	71	30
10,078	1,803	Adur -	-	-	-	ditto	-	"	1855	William Akien and another	-	-	-	-	79	4	16	3	8	9	13	64	35
44,319	1,804	Stephenson	-	-	-	ditto	-	"	1862	William Gwynn -	-	-	-	-	80	9	17	2	9	1	19	72	29
47,176	1,805	Mercury -	-	-	-	ditto	-	1866	1865	John Willis -	-	-	-	-	161	5	26	7	14	4	175	286	260
47,178	1,806	Albany -	-	-	-	ditto	-	"	"	James Cawood -	-	-	-	-	75	5	18	2	7	0	35	72	307
53,201	1,807	Powerful	-	-	-	ditto	-	"	"	William Best and another	-	-	-	-	89	9	18	2	9	5	30	89	84
53,204	1,808	Mary Austin	-	-	-	ditto	-	"	"	W. A. F. Austin	-	-	-	-	190	3	19	5	9	0	119	162	30
27,046	1,809	T. D. Marshall	-	-	-	ditto	-	"	1859	John Scott -	-	-	-	-	82	2	16	4	8	8	18	65	30
53,208	1,810	Basingstoke	-	-	-	ditto	-	"	1865	Robert Eklers -	-	-	-	-	206	5	27	0	15	8	520	649	80
27,427	1,811	Pilots -	-	-	-	Shoreham -	1860	1859	1859	John Bartley and others	-	-	-	-	77	3	16	6	9	0	15	71	34
18,862	1,812	Ruby -	-	-	-	Southampton	1841	1841	1841	W. A. Fitzhugh and others	-	-	-	-	114	9	16	4	8	1	53	111	40
18,863	1,813	*Pearl -	-	-	-	ditto	1844	1844	1844	Southampton, Isle of Wight, and South of England Royal Mail Packet Company.	-	-	-	-	89	8	13	3	7	9	33	64	32
13,825	1,814	Wonder -	-	-	-	ditto	1847	"	1845	London and South Western Railway Company	-	-	-	-	158	0	20	6	10	1	137	218	160
13,813	1,815	*Transit -	-	-	-	ditto	"	"	1847	- ditto	-	-	-	-	126	0	19	6	18	0	160	267	80
13,814	1,816	Courier -	-	-	-	ditto	1848	"	1847	- ditto	-	-	-	-	167	0	22	5	10	8	147	265	200
13,865	1,817	*Queen -	-	-	-	ditto	"	"	1848	Southampton, Isle of Wight, and South of England Royal Mail Packet Company.	-	-	-	-	117	1	14	0	7	5	56	94	40
13,819	1,818	Dispatch -	-	-	-	ditto	1860	1847	1847	London and South Western Railway Company	-	-	-	-	166	7	22	1	11	6	149	273	200
13,860	1,819	Medina -	-	-	-	ditto	1863	1862	1862	Southampton, Isle of Wight, and South of England Royal Mail Packet Company.	-	-	-	-	120	8	14	9	8	6	55	103	50
13,805	1,820	Atalanta -	-	-	-	ditto	"	"	1836	London and South Western Railway Company	-	-	-	-	169	4	22	1	12	7	162	313	120
25,119	1,821	*Gem -	-	-	-	ditto	"	"	1840	Joseph Stace and others	-	-	-	-	107	6	14	9	8	0	47	87	40
13,809	1,822	*Argyll -	-	-	-	ditto	"	"	1831	Henry Lowndes -	-	-	-	-	99	0	16	3	7	4	65	92	30
13,965	1,823	*Monarch -	-	-	-	ditto	1854	"	1854	Southampton Steam Towing Company -	-	-	-	-	95	4	17	5	9	7	46	122	80
26,115	1,824	Alliance -	-	-	-	ditto	1855	"	1855	London and South Western Railway Company	-	-	-	-	175	5	23	7	14	6	168	361	225
11,385	1,825	Havre -	-	-	-	ditto	1856	"	1856	- ditto	-	-	-	-	184	7	24	0	14	5	200	387	220
16,149	1,826	Iled Lion	-	-	-	ditto	1858	"	1856	Inman & Sharp -	-	-	-	-	76	8	15	0	8	0	14	54	39
22,532	1,827	Emerald -	-	-	-	ditto	"	"	1857	Southampton, Isle of Wight, and South of England Royal Mail Packet Company.	-	-	-	-	105	0	14	1	8	1	44	26	32
22,538	1,828	Louisa -	-	-	-	ditto	1859	1858	1858	W. Winkworth -	-	-	-	-	79	8	12	4	5	6	23	37	20
27,362	1,829	Pioneer -	-	-	-	ditto	"	"	1859	J. T. Leather -	-	-	-	-	75	3	15	5	8	1	13	52	24
28,108	1,830	Cambrian	-	-	-	ditto	1860	"	1860	Union Steam Ship Company	-	-	-	-	245	1	30	1	18	4	868	1,055	120
28,109	1,831	Southampton	-	-	-	ditto	"	"	"	London and South Western Railway Company	-	-	-	-	215	5	25	4	12	7	299	774	250

RETURN of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.
					Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.	
1,332	Sapphire -	Southampton 1861	1860	Southampton, Isle of Wight, and South of England Royal Mail Packet Company.	Feet. 10 1/2.	Feet. 10 1/2.	Feet. 10 1/2.	51	82	49 iron.
1,333	Phoenix -	ditto	1864	Southampton Steam Towing Company.	99 9	19 6	7 9	30	70	40
1,334	Aid -	ditto	1862	ditto	84 8	17 3	9 7	28	82	45
1,335	Briton -	ditto	1862	Union Steam Ship Company	249 3	30 7	23 9	939	1,164	120 iron, screw.
1,336	American -	ditto	"	Henry Pincock and others	190 3	25 5	8 2	32	173	90 iron.
1,337	Lord of the Isles -	ditto	1862	Southampton, Isle of Wight, and South of England Royal Mail Steam Packet Company.	135 5	18 0	7 0	60	91	60 iron.
1,338	Lady of the Lake -	ditto	"	ditto	147 0	17 9	7 6	66	104	60
1,339	Frederica -	ditto	1863	W. Winkworth and another	90 4	13 1	5 6	21	35	16 iron.
1,340	Saxon -	ditto	"	Union Steam Ship Company	245 0	31 2	28 7	894	1,141	220 iron, screw.
1,341	Roman -	ditto	"	ditto	267 0	32 4	28 6	1,027	1,282	220 iron, screw.
1,342	Normandy -	ditto	"	London and South Western Railway Company	269 9	24 1	13 7	253	425	225 iron.
1,343	Solent -	ditto	"	G. Iaman and another	85 4	15 6	9 1	33	56	32
1,344	Dumfries -	ditto	1867	London and South Western Railway Company	112 0	18 0	9 0	84	124	30 iron, screw.
1,345	Brilliant -	ditto	1864	G. H. Ackers	192 3	21 1	14 7	250	381	100 iron, screw.
1,346	Norman -	ditto	1864	George Langley -	186 0	25 3	16 4 1/2	465	561	60 iron, screw.
1,347	Anglian -	ditto	1864	Union Steam Ship Company (Limited)	204 9	26 3	15 9	532	661	80 iron, screw.
1,348	Britann -	ditto	"	London and South Western Railway Company	215 6	25 6	13 1	351	529	250 iron.
1,349	Griffin -	ditto	1868	ditto	155 0	20 1	11 8	147	216	60 iron, screw.
1,350	Mauritius -	ditto	1864	Union Steam Ship Company (Limited)	210 0	26 4	15 2	442	587	120 iron, screw.
1,351	St. Malo -	ditto	1865	London and South Western Railway Company	161 0	29 0	13 0	210	301	100 iron, screw.
1,352	Southampton -	ditto	"	Southampton Steam Collier and Coal Company (Limited).	189 5	27 0	16 6	506	610	80 iron, screw.
1,353	Natal -	ditto	"	Union Steam Ship Company (Limited)	205 9	27 8	15 5	437	618	100 iron, screw.
1,354	Norseman -	ditto	"	ditto	209 9	32 3	16 5	960	1,245	290 iron, screw.
1,355	*British Queen -	Stockton 1840	1840	Hannah Strong -	82 7	16 0	8 9	39	90	50
1,356	*Resper -	ditto	1850	John Scourfield -	74 9	14 1	8 0	92	64	35
1,357	*Voltaireur -	ditto	1851	George Craggs -	83 0	15 9	8 6	29	83	45
1,358	Stockton -	ditto	1857	Timothy Hughes	182 2	25 8	12 4	311	393	180 iron, screw.
1,359	Tees -	ditto	"	Joha Dixon and others	168 4	25 7	14 0	313	396	70 iron, screw.
1,360	War Eagle -	ditto	1847	William and Charles Duncan	74 2	16 2	8 4	11	56	38 iron, screw.
1,361	Advance -	ditto	1864	Joha Vaughan and others	175 4	22 4	13 0	216	318	80 iron, screw.
1,362	Echo -	ditto	1866	W. and C. C. Duncan	81 2	16 1	8 0	17	65	33
1,363	Forget-me-not -	ditto	1868	W. Dixon and another	92 2	19 8	6 9	49	62	14 iron.
1,364	Prairie Flower -	ditto	1865	George Dixon	90 5	16 0	6 2	38	66	26 iron.
1,365	*Pride in the North -	Sunderland 1844	1837	Thomas Winter and another	44 4	8 2	5 6	7	17	-
1,366	*Earl of Sunderland -	ditto	1846	Marquis of Londonderry	73 5	15 2	8 9	17	73	4
1,367	*Wanabeck -	ditto	1846	Thomas Winter -	63 7	11 9	6 5	12	32	-

Year	Name	Rank	Service	Age	Pay	Grants	Notes
1868	Pilot	-	-	-	-	-	-
1869	Haswell	-	-	-	-	-	-
1870	Sak Horst	-	-	-	-	-	-
1871	Whitwell	-	-	-	-	-	-
1872	Engineer	-	-	-	-	-	-
1873	Tom Bowllat	-	-	-	-	-	-
1874	Vesta	-	-	-	-	-	-
1875	Scottish Maid	-	-	-	-	-	-
1876	Industry	-	-	-	-	-	-
1877	Clyde	-	-	-	-	-	-
1878	Beaufort	-	-	-	-	-	-
1879	William and John	-	-	-	-	-	-
1880	Lambton	-	-	-	-	-	-
1881	Ovington	-	-	-	-	-	-
1882	Pilot	-	-	-	-	-	-
1883	Queen	-	-	-	-	-	-
1884	Bee	-	-	-	-	-	-
1885	Seaton	-	-	-	-	-	-
1886	Londerry	-	-	-	-	-	-
1887	Water Lily	-	-	-	-	-	-
1888	Lambton	-	-	-	-	-	-
1889	Harry Vane	-	-	-	-	-	-
1890	Gentry	-	-	-	-	-	-
1891	Countess of Durham	-	-	-	-	-	-
1892	Advante	-	-	-	-	-	-
1893	Diamond	-	-	-	-	-	-
1894	Gipsy King	-	-	-	-	-	-
1895	Blossom	-	-	-	-	-	-
1896	Harvest Home	-	-	-	-	-	-
1897	Samson	-	-	-	-	-	-
1898	Welches	-	-	-	-	-	-
1899	Helen McGregor	-	-	-	-	-	-
1900	Vigilant	-	-	-	-	-	-
1901	Atlas	-	-	-	-	-	-
1902	Wearmouth	-	-	-	-	-	-
1903	Hetton	-	-	-	-	-	-
1904	Cochrane	-	-	-	-	-	-
1905	Tiger	-	-	-	-	-	-
1906	Ann and Jane	-	-	-	-	-	-
1907	Seafower	-	-	-	-	-	-
1908	Daisy	-	-	-	-	-	-
1909	Carrs	-	-	-	-	-	-
1910	Marco Polo	-	-	-	-	-	-
1911	Ryhope	-	-	-	-	-	-
1912	General Havelock	-	-	-	-	-	-
1913	Southwick	-	-	-	-	-	-
1914	Earl of Durham	-	-	-	-	-	-
1915	Friends	-	-	-	-	-	-
1916	Friends	-	-	-	-	-	-

Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	—
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
1,917	48,723	Earl of Elgin	Sunderland 1861	1861	H. T. Morton and others	176 9	28 7	16 6	480	606	80	iron, screw.
1,918	48,727	Parthenon	ditto	"	E. T. Gourley	214 6	31 3	18 1	701	876	120	iron, screw.
1,919	43,732	Donglas	ditto	"	William Stobart and others	189 7	28 5	16 7	533	668	70	screw.
1,920	43,736	Lady Havelock	ditto	"	John Smurthwaite and others	186 0	24 0	13 0	393	480	90	iron, screw.
1,921	43,745	Victoria	ditto	"	William Davison and another	71 1	13 6	7 6	18	46	25	
1,922	48,754	Belmont	ditto	"	William Brown and another	73 0	15 1	7 8	16	48	20	
1,923	48,757	Atlas	ditto	"	E. T. Gourley and others	210 3	31 7	18 1	672	846	100	iron, screw.
1,924	48,758	Ajax	ditto	"	- ditto -	211 2	31 7	18 3	684	852	90	iron, screw.
1,925	2,266	Shannon	ditto	1848	R. C. Hudson and others	71 1	14 8	7 9	15	45	23	
1,926	28,086	Thames	ditto	1859	John Smurthwaite and others	142 0	23 0	12 5	192	282	50	iron, screw.
1,927	44,474	Heatherbell	ditto	1862	Morpeth Drydon and others	79 1	17 1	8 8	19	68	30	
1,928	20,959	Anne	ditto	1853	J. L. Atkinson and others	64 4	12 2	6 7	12	30	13	
1,929	44,494	Volunteer	ditto	1862	James Laing and others	194 5	28 8	16 9	544	691	90	iron, screw.
1,930	44,496	Blue Bell	ditto	"	Michael Thurlbeck and others	73 7	15 8	8 5	16	55	24	
1,931	44,498	Lucerne	ditto	"	James Laing and others	203 1	29 2	16 9	532	679	90	iron, screw.
1,932	20,258	Ocean Bride	ditto	1863	G. Venus and another	74 0	15 0	7 4	11	45	20	
1,933	44,550	Hector	ditto	1857	J. Laing and others	243 0	34 8	20 1	1,295	1,615	200	iron, screw.
1,934	47,613	Lady Beatrice	ditto	1863	Earl of Durham	136 3	28 0	16 7	489	625	80	iron, screw.
1,935	47,646	Friend of all Nations	ditto	"	A. Barber and another	80 1	17 3	9 4	17	74	30	
1,936	47,649	Ocean King	ditto	"	W. T. Bell and others	196 0	29 0	16 0	554	699	90	iron, screw.
1,937	10,177	Ayrshire	ditto	1848	J. Pringle	70 4	14 9	8 1	12	44	28	
1,938	30,082	Black Boy	ditto	1854	Nicholas Wood	166 2	26 7	15 7	387	504	70	iron, screw.
1,939	47,719	Biddick	ditto	1864	H. T. Morton and others	185 7	28 9	16 6	504	640	80	iron, screw.
1,940	47,730	Elaine	ditto	"	John Cory and another	190 0	28 2	16 0	454	593	100	iron, screw.
1,941	47,738	Tasso	ditto	"	George Swainson and others	213 6	28 8	16 4	598	745	99	iron, screw.
1,942	51,154	Edith Owen	ditto	"	Robert Ford	183 3	26 3	16 3	380	497	80	iron, screw.
1,943	26,450	Killingworth	ditto	1855	Nicholas Wood	170 4	29 0	16 6	428	578	70	iron, screw.
1,944	51,170	Advance	ditto	1865	Henry Holmes and others	207 4	29 4	16 5	608	768	100	iron, screw.
1,945	51,176	Milbanke	ditto	"	R. M. Hudson and others	189 7	28 2	17 2	548	702	100	iron, screw.
1,946	51,181	Achilles	ditto	"	E. T. Gourley	234 7	32 2	18 4	781	985	130	iron, screw.
1,947	51,192	Tarset	ditto	"	John Candlish	196 0	29 0	17 0	583	741	120	iron, screw.
1,948	51,197	Lumley	ditto	"	H. T. Morton and others	195 2	28 8	16 6	538	683	90	iron, screw.
1,949	51,200	Memphis	ditto	"	William Pile and another	246 8	31 6	16 6	956	1,210	140	iron, screw.
1,950	53,083	Wear	ditto	"	T. R. Oswald and others	196 1	28 8	16 7	557	699	90	iron, screw.
1,951	51,171	Ellen Constance	ditto	"	R. T. Buck	199 7	27 7	16 2	517	655	100	iron, screw.
1,952	26,325	Hero	ditto	1860	John Wilkinson and another	70 8	13 0	6 3	13	38	18	
1,953	53,110	Onward	ditto	1865	Charles Gumm	218 8	29 3	16 3	624	783	98	iron, screw.
1,954	53,113	Cleopatra	ditto	"	William Pile and another	298 4	30 0	23 4	812	1,012	130	iron, screw.
1,955	2,744	Secret	ditto	1851	William Wilson and another	89 5	14 1	7 2	11	89	24	

1,956	53,114	Fatfield	-	-	1865	1865	C. R. Fenwich	-	-	-	185	2	28	7	16	6	511	647	80	iron, screw.
1,957	27,864	Blue Bonnet	-	-	"	1859	John Turpin	-	-	-	74	5	14	9	7	5	14	46	20	iron, screw.
1,958	53,117	Berrington	-	-	"	1865	William Cory and another	-	-	-	180	7	28	0	17	0	488	629	80	iron, screw.
1,959	53,118	Belmont	-	-	"	"	W. T. Bell and others	-	-	-	185	6	28	7	16	7	511	647	80	iron, screw.
1,960	28,596	Sir William Wallace	-	-	"	1861	Michael Thurlbeck	-	-	-	73	1	15	2	7	5	19	48	20	iron, screw.
1,961	53,121	Como	-	-	"	1865	T. and J. C. Gray and others	-	-	-	185	4	28	5	16	8	504	645	80	iron, screw.
1,962	53,127	Venice	-	-	"	"	E. T. Gourley	-	-	-	200	5	27	9	17	7	626	786	90	iron, screw.
1,963	20,450	*Dragon Fly	-	-	1840	"	N. B. Allen and others	-	-	-	68	3	14	2	8	2	15	64	-	-
1,964	44,933	*Pioneer	-	-	1843	1843	Nathaniel Tregelles	-	-	-	70	0	16	0	9	4	19	81	50	iron.
1,965	7,926	*Tartar	-	-	1850	1850	James Petrie and others	-	-	-	86	0	16	7	9	4	46	110	-	-
1,966	-	*Donna	-	-	"	1840	Port Talbot Company	-	-	-	72	6	15	0	8	8	22	69	70	iron.
1,967	3,938	Prince of Wales	-	-	1842	1842	J. W. Pockett	-	-	-	130	8	17	3	10	0	80	156	70	iron.
1,968	5,832	Chieftain	-	-	1847	1847	James Knox	-	-	-	67	3	13	8	7	5	30	47	25	-
1,969	2,497	Eagle	-	-	1857	1855	Edward Brown and others	-	-	-	82	5	16	9	9	3	16	73	45	-
1,970	24,692	Augusta	-	-	1858	1849	H. K. Vivian	-	-	-	140	4	17	3	10	0	125	184	40	iron, screw.
1,971	26,036	Henry Southan	-	-	"	1848	J. W. Pockett	-	-	-	139	6	17	8	8	4	96	141	35	iron, screw.
1,972	26,742	Charlotte	-	-	1859	1868	William Jones	-	-	-	83	0	18	7	7	7	60	88	20	iron, screw.
1,973	20,797	Stella	-	-	1860	"	J. H. Simpson and others	-	-	-	85	3	17	3	9	3	22	78	45	-
1,974	28,057	Minos	-	-	"	1860	C. H. Smith	-	-	-	111	7	15	5	9	0	26	94	80	iron.
1,975	29,594	Fleur de Marie	-	-	1861	1846	H. R. Vivian	-	-	-	48	2	11	7	9	2	19	29	10	iron, screw.
1,976	29,600	Morfa	-	-	1862	1862	A. P. Vivian	-	-	-	140	5	25	0	14	0	300	379	40	iron, screw.
1,977	29,599	Charley	-	-	1863	"	R. Williams and others	-	-	-	87	8	17	0	10	0	31	110	60	iron.
1,978	47,857	Havre	-	-	1864	1864	Henry Bath and others	-	-	-	147	4	21	5½	12	6	177	200	50	iron, screw.
1,979	47,859	Tweed	-	-	"	"	John Dickson	-	-	-	87	3	17	5	9	0	25	82	36	-
1,980	45,620	William Scott	-	-	1865	1863	William Roser and others	-	-	-	81	6	16	8	9	3	22	72	32	-
1,981	51,109	Zeta	-	-	"	1865	G. T. Davy and another	-	-	-	191	2	28	2	17	5	558	734	90	iron, screw.
1,982	3,948	Neath Abbey	-	-	"	1846	Evan Evans	-	-	-	109	6	17	1	8	9	77	102	60	iron, screw.
1,983	20,904	*Industry	-	-	1853	1848	S. W. Hutchings and others	-	-	-	67	9	12	6	6	7	19	42	18	-
1,984	20,488	Gem	-	-	1863	1857	C. Temple and others	-	-	-	63	8	14	5	7	5	8	39	20	-
1,985	21,510	Prince	-	-	1852	1849	Joseph Cosens and others	-	-	-	128	5	13	3	7	6	61	86	40	iron.
1,986	6,228	Ocean Pride	-	-	1856	1844	J. T. Leather	-	-	-	72	0	12	6	5	8	18	29	10	-
1,987	17,807	Cygnus	-	-	1858	1854	Weymouth and Channel Islands Steam Packet Company.	-	-	-	182	0	21	4	9	7	133	245	120	iron.
1,988	18,602	Aquila	-	-	"	"	-	-	-	-	180	4	21	0	10	9	138	264	110	iron.
1,989	11,918	Brighton	-	-	1859	1867	-	-	-	-	193	5	20	9	10	0	180	286	140	iron.
1,990	19,586	Ceres	-	-	"	1859	T. A. Blakeley	-	-	-	143	0	21	6	10	5	80	168	60	iron, screw.
1,991	2,102	Bannoekburn	-	-	"	1847	John Tizard and others	-	-	-	69	6	16	0	8	4	11	53	28	-
1,992	6,387	Premier	-	-	"	1846	-	-	-	-	140	2	17	0	6	9	62	98	65	iron.
1,993	12,596	Contractor	-	-	1861	1857	J. T. Leather	-	-	-	90	3	17	0	9	0	23	86	40	-
1,994	28,012	Commodore	-	-	1863	1863	J. Cosens and others	-	-	-	93	0	18	6	9	6	26	96	60	-
1,995	8,941	Hilda	-	-	1853	1853	Whitby Steam Packet Company	-	-	-	71	4	14	2	8	1	16	54	25	-
1,996	17,458	Esk	-	-	1857	1857	Edward Corner and others	-	-	-	89	0	17	7	9	3	21	86	45	-
1,997	45,740	Primus	-	-	1865	1865	J. H. Thomas and another	-	-	-	190	6	28	0	16	6	521	656	80	iron, screw.
1,998	9,377	*Prince Albert	-	-	1842	1840	Trustees of Whitehaven Harbour	-	-	-	82	1	15	0	8	4	37	87	60	-
1,999	9,236	Queen	-	-	1845	1844	Thomas Jackson and others	-	-	-	158	5	23	5	13	4	243	373	180	-
2,000	12,788	Ajax	-	-	1865	1855	John Musgrave	-	-	-	94	9	20	9	11	4	11	116	100	-
2,001	47,788	Prince of Wales	-	-	"	1862	John Collins	-	-	-	110	1	21	3	9	6	77	152	140	iron.
2,002	14,432	Britannia	-	-	1862	1862	Richard Young	-	-	-	75	7	16	1	8	0	24	66	33	-
2,003	44,551	Newton Colville	-	-	1864	1864	-	-	-	-	198	3	29	2	16	9	570	726	100	iron, screw.

RETURN of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1886, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	—
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
1,917	43,722	Earl of Elgin	Sunderland 1861	1861	H. T. Morton and others	176 9	28 7	16 6	480	606	80	iron, screw.
1,918	43,727	Parthenon	ditto	"	E. T. Gourley	214 6	31 3	18 1	701	876	120	iron, screw.
1,919	43,732	Douglas	ditto	"	William Stobart and others	189 7	28 5	16 7	533	668	70	screw.
1,920	43,736	Lady Havelock	ditto	"	John Smurthwaite and others	186 0	24 0	13 0	393	480	90	iron, screw.
1,921	43,745	Victoria	ditto	"	William Davison and another	71 1	13 6	7 6	18	46	25	
1,922	43,754	Belmont	ditto	"	William Brown and another	73 0	15 1	7 8	16	48	20	
1,923	43,757	Atlas	ditto	"	E. T. Gourley and others	210 3	31 7	18 1	672	846	100	iron, screw.
1,924	43,768	Ajax	ditto	"	- ditto	211 2	31 7	18 3	684	852	90	iron, screw.
	2,266	Shannon	ditto	1848	R. C. Hudson and others	71 1	14 8	7 9	15	45	23	
		Thames	ditto	1859	John Smurthwaite and others	142 0	23 0	12 5	192	282	50	iron, screw.
		Teatherball	ditto	1862	Morpeth Drydon and others	70 1	17 1	8 8	19	68	30	
		ntear	ditto	1853	J. L. Atkinson and others	64 4	12 2	6 7	12	30	13	
		Bell	ditto	1862	James Laing and others	194 5	28 8	16 9	544	691	90	iron, screw.
		rne	ditto	"	Michael Thurlbeck and others	73 7	15 8	8 5	16	55	24	
		n Bride	ditto	1857	James Laing and others	243 1	29 2	16 9	532	679	90	iron, screw.
		or	ditto	1863	G. Venus and another				1	45	20	
		Betrix	ditto	"	J. Laing and others							iron, screw.

[illegible]

RETURN of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	—
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
2,004	45,020	Medusa -	Wisebeach -	1864	1862	189 4	29 2	16 9	404	602	80	iron, screw.
2,005	44,558	Cambridgeshire -	ditto -	1865	1865	205 0	28 8	16 0	579	729	98	iron, screw.
2,006	14,609	*Derwent -	Workington -	1850	1849	73 8	15 7	8 7	18	67	35	
2,007	15,051	*Urania -	Yarmouth -	1855	1854	142 2	18 9	11 6	196	254	60	iron, screw.
2,008	6,697	Robert Owen -	ditto -	1860	1848	80 0	17 2	8 9	24	75	45	
2,009	28,600	Pioneer -	ditto -	1862	1861	86 6	17 3	9 5	29	81	33	
2,010	43,909	Sailor -	ditto -	"	1862	86 6	17 5	9 2	25	79	34	
2,011	21,074	Minnet -	ditto -	1863	1868	85 7	16 7 1/2	9 3	18	77	40	
2,012	17,056	Andrew Woodhouse -	ditto -	"	1856	85 6	17 6	9 4	16	79	40	
2,013	46,322	Buccleugh -	ditto -	"	1863	134 0	21 4	9 8	131	174	40	screw.
2,014	45,328	Pilot -	ditto -	"	"	87 3	17 0	9 3	22	80	35	
2,015	4,786	Norfolk -	ditto -	1864	1846	150 5	21 4	9 7	148	234	120	iron.
2,016	26,349	*City of London -	Aberdeen -	1844	1844	216 8	30 0	19 2	728	1,117	420	
2,017	20,389	Heatherbell -	ditto -	1857	1857	88 0	17 0	9 6	16	82	40	
2,018	26,622	Gambia -	ditto -	1859	1855	191 9	26 2	14 8	352	517	80	iron, screw.
2,019	10,099	Britannia -	ditto -	1860	1857	85 3	11 0	9 0	16	82	40	
2,020	27,575	Derwent -	ditto -	"	1860	78 4	16 7	9 0	11	68	30	
2,021	43,556	Queen -	ditto -	1861	1861	180 6	26 0	18 2	263	404	120	iron, screw.
2,022	44,434	Bon Accord -	ditto -	1862	1862	90 9	18 6	9 7	32	99	40	
2,023	8,444	Vanguard -	ditto -	1863	1843	189 1	27 2	16 1	295	608	300	iron.
2,024	20,345	Prince Consort -	ditto -	"	1868	222 9	25 2	14 1	392	628	300	iron.
2,025	48,858	Lily of the West -	ditto -	1864	1864	51 5	10 4	5 9	11	17	9	screw.
2,026	7,841	Pharos -	ditto -	"	1846	171 5 1/2	21 7	18 6	248	828	160	iron.
2,027	17,283	Princess Alice -	ditto -	1865	1843	165 6	27 0	18 8	255	406	150	iron.
2,028	24,392	La Plata -	ditto -	"	1854	160 0	25 0	18 2	253	872	50	iron, screw.
2,029	53,242	City of Aberdeen -	ditto -	"	1865	227 5	29 4	16 0	440	682	170	iron, screw.
2,030	10,044	*Prince of Wales -	Alloa -	1845	1845	180 3	21 1	7 9	98	154	80	
2,031	10,001	Stirling Castle -	ditto -	1849	1826	88 0	16 9	8 0	52	92	40	
2,032	18,378	Robert Bruce -	ditto -	1857	1856	69 5	17 1	7 6	8	58	27	
2,033	2,457	Harvest Home -	ditto -	"	1837	73 8	14 3	8 5	12	50	32	
2,034	20,792	Victoria -	ditto -	1858	1858	135 8	15 0	6 0	67	92	40	iron.
2,035	28,328	Alpheus -	ditto -	1864	1860	84 5	17 6	7 4	86	52	20	screw.
2,036	12,175	Northumberland -	Ardrossan -	1859	1852	78 6	17 2	7 9	14	72	40	iron.
2,037	26,958	Earl of Arran -	ditto -	1860	1860	143 4	18 5	8 5	91	144	80	iron.

[illegible]

Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	—
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
2,084	1,821	*Africa	Glasgow	1853	J. Burns and others	265 6	37 9	Feet. 10ft. 2	1,216	2,226	650	iron.
2,085	3,177	Venus	ditto	1852	Duncan McKellar	172 0	17 1	8 2	72	140	92	iron.
2,086	1,609	*America	ditto	1854	J. Burns and others	249 0	35 1	25 3	984	1,826	600	iron.
2,087	7,074	*Niagara	ditto	"	- ditto	249 0	35 1	25 2	1,008	1,835	680	iron, screw.
2,088	17,669	Therese	ditto	1854	John Tennant	-	21 7	11 7	200	289	60	iron, screw.
2,089	1,285	*Canada	ditto	1848	J. Burns and others	249 0	35 1	25 7	1,102	1,831	698	iron, screw.
2,090	1,816	*Delta	ditto	1854	Sir Samuel Cunard, Bart.	208 6	27 0	15 8	425	644	120	iron, screw.
2,091	20,705	*Islay	ditto	1849	Charles Morrison and others	167 0	20 8	10 6	200	325	160	iron.
2,092	3,186	Gem	ditto	1854	H. R. Saunders	161 0	15 9	7 5	84	132	140	iron.
2,093	3,238	Lightning	ditto	1855	R. B. Durham and others	205 0	25 9	19 3	316	367	240	iron, screw.
2,094	22,804	Nelson	ditto	"	P. L. Henderson	150 1	16 5	6 8	61	114	60	iron.
2,095	22,823	Clansman	ditto	"	David Hutcheson & Co.	191 3	25 7	12 8	261	414	180	iron.
2,096	22,935	Garland	ditto	"	John Cameron and others	165 8	23 1	12 2	192	283	120	iron, screw.
2,097	22,895	Sir Colin Campbell	ditto	"	Henry Curtis and others	166 7	17 5	7 1	66	120	85	iron.
2,098	11,523	Persia	ditto	1856	John Burns and others	376 0	45 3	30 0	2,079	3,300	900	iron.
2,099	11,550	Caledonia	ditto	"	A. Watson and another	162 8	18 7	9 4	115	183	80	iron.
2,100	15,462	Lochgail	ditto	1853	James Watson and others	163 0	16 0	7 1	78	124	80	iron.
2,101	26,137	Rapid	ditto	1848	M'Farlane & Co.	74 0	15 7	8 6	7	51	35	iron.
2,102	25,943	Europa	ditto	"	John Burns and others	286 3	38 1	17 0	1,208	1,918	800	iron.
2,103	16,249	Nimrod	ditto	"	Kidston & Whyte	83 4	16 4	8 9	17	67	45	iron.
2,104	2,040	Maid of Orleans	ditto	"	M'Farlane & Co.	80 6	16 5	8 7	16	64	32	iron.
2,105	7,648	Sir Charles Napier	ditto	1854	John Steel and others	72 9	15 0	8 3	13	51	28	iron.
2,106	2,961	Firefly	ditto	"	- ditto	75 6	15 2	8 5	7	51	30	iron.
2,107	17,185	Carthage	ditto	1857	A. Perceval	216 8	30 0	15 0	500	736	150	iron.
2,108	6,383	Industry	ditto	1814	A. M'George	68 1	17 2	8 1	48	69	14	iron.
2,109	15,488	Express	ditto	1854	J. M. Campbell	179 0	16 1	8 9	71	113	70	iron.
2,110	19,486	General Williams	ditto	1856	John Steel and others	79 0	15 7	8 0	11	60	35	iron, screw.
2,111	19,488	James Watt	ditto	1857	- ditto	79 0	17 2	7 1	47	69	15	iron, screw.
2,112	20,519	Glasgow	ditto	"	J. B. Murdoch and another	63 2	17 0	8 3	39	60	20	iron, screw.
2,113	20,523	Leith	ditto	1858	- ditto	68 2	17 0	8 3	39	61	20	iron, screw.
2,114	20,524	Henry Bell	ditto	"	John Steel and others	78 7	17 2	7 0	47	69	15	iron, screw.
2,115	8,010	Lynx	ditto	1854	J. T. Caird	213 5	23 6	13 3	314	499	240	iron.
2,116	21,885	Palestine	ditto	1858	John Burns and others	255 2	34 2	24 3	986	1,377	260	iron, screw.
2,117	6,380	Patrol	ditto	"	Alexander Watson and another	168 6	18 0	8 0	80	162	60	iron.
2,118	598	Oscar	ditto	1845	J. H. Nash and others	169 6	23 2	13 5	198	330	75	iron, screw.
2,119	25,294	Ranger	ditto	1858	Henry Lafone	104 8	16 0	9 1	58	96	48	iron, screw.
2,120	25,890	Auguste Louise	ditto	"	H. L. Seligmann	189 8	19 0	10 0	116	187	40	iron, screw.
2,121	30,499	Governor Higginson	ditto	1856	Calcutta and Burmah Steam Navigation Company.	208 0	27 1	16 2	411	644	160	iron, screw.

2,122	27,113	Plover	-	-	ditto	-	1859	1849	David Hutcheson and others	-	-	83	8	14	8	8	9	69	110	50	iron.
2,123	27,114	Lochlong	-	-	ditto	-	"	1869	James Wilson and others	-	-	150	4	15	2	7	2	73	116	60	iron.
2,124	27,116	Vulcan	-	-	ditto	-	"	1854	A. & T. McLean	-	-	167	9	16	3	7	7	81	129	80	iron.
2,125	3,857	Cardiff Castle	-	-	ditto	-	"	1844	Alexander Watson	-	-	173	5	19	3	8	8	67	101	60	iron.
2,126	27,121	Joanna	-	-	ditto	-	"	1858	Forth and Clyde Navigation Company	-	-	64	0	11	3	4	7	19	25	6	screw.
2,127	27,957	"A"	-	-	ditto	-	"	1849	J. Davis	-	-	65	5½	15	7½	7	4	42	52	20	iron, screw.
2,128	19,492	Australasian	-	-	ditto	-	"	1857	James Burns and others	-	-	331	7	42	1	20	9	1,513	2,781	700	iron, screw.
2,129	28,211	"I"	-	-	ditto	-	"	1850	Forth and Clyde Navigation Company	-	-	65	9	15	0	7	0	42	52	20	iron, screw.
2,130	28,216	Olympus	-	-	ditto	-	"	1860	John Burns and others	-	-	276	8	36	0	26	0	1,220	1,794	250	iron, screw.
2,131	28,220	Marathon	-	-	ditto	-	"	"	- ditto	-	-	274	0	36	0	25	0	1,218	1,784	250	iron, screw.
2,132	28,221	Ostrich	-	-	ditto	-	"	"	- ditto	-	-	210	2	27	1	14	1	424	624	150	iron, screw.
2,133	3,160	Edinburgh Castle	-	-	ditto	-	"	1844	David Hutcheson and others	-	-	140	2	16	5	7	0	44	98	45	iron.
2,134	28,225	Hecla	-	-	ditto	-	"	1860	John Burns and others	-	-	274	1	36	2½	25	8½	1,214	1,785	250	iron, screw.
2,135	28,477	Atlas	-	-	ditto	-	"	"	- ditto	-	-	276	9½	36	2½	26	0	1,220	1,794	250	iron, screw.
2,136	28,479	Margaretha Stevenson	-	-	ditto	-	"	"	Marie E. Stevenson	-	-	110	6	17	0	9	9	66	114	40	iron, screw.
2,137	13,532	Sromboli	-	-	ditto	-	"	1856	James Burns and others	-	-	108	8	28	8	17	6	619	734	100	iron, screw.
2,138	28,883	Pioneer	-	-	ditto	-	"	1859	James Jeffrey and another	-	-	66	5	13	4½	4	9	28	83	12	iron, screw.
2,139	29,275	Advance	-	-	ditto	-	"	1861	William McCoskry	-	-	107	1	18	6½	9	3	37	127	80	iron.
2,140	29,278	Lancefield	-	-	ditto	-	"	"	Robert McCracken and another	-	-	145	6	23	2	13	3½	172	280	60	iron, screw.
2,141	29,279	Coringa	-	-	ditto	-	"	"	Calcutta and Burmah Steam Navigation Company.	-	-	199	8	27	5	15	8	435	563	150	iron, screw.
2,142	29,282	Moulmein	-	-	ditto	-	"	"	- ditto	-	-	151	5	25	2	13	4	238	323	70	iron, screw.
2,143	29,290	Rothsay Castle	-	-	ditto	-	"	"	David McKett	-	-	191	5	19	0	8	3	87	177	110	iron.
2,144	29,389	Flying Dutchman	-	-	ditto	-	"	"	J. P. Kidson and others	-	-	106	3	19	1	10	1	44	125	50	iron.
2,145	28,478	Athanasian	-	-	ditto	-	"	1860	John Hutchison	-	-	182	2	25	1½	14	6	306	418	60	iron, screw.
2,146	28,213	Dunglass	-	-	ditto	-	"	1857	W. J. Rintoul and others	-	-	68	3	17	7	6	7½	48	53	8	iron, screw.
2,147	28,214	Renfrew	-	-	ditto	-	"	"	- ditto	-	-	70	2½	17	6	6	7½	48	53	8	iron, screw.
2,148	14,592	Chesapeake	-	-	ditto	-	"	1856	Alexander McKinnon and another	-	-	76	2	15	3	8	3	12	54	26	iron, screw.
2,149	43,687	Sidon	-	-	ditto	-	"	1861	John Burns and others	-	-	275	8	36	2½	25	8	1,267	1,782	250	iron, screw.
2,150	43,690	Palermo	-	-	ditto	-	"	"	R. Little and others	-	-	169	5	21	9	13	5	289	380	50	iron, screw.
2,151	28,890	Kedar	-	-	ditto	-	"	1860	John Burns and others	-	-	275	8	36	2½	25	7½	1,212	1,783	250	iron, screw.
2,152	43,695	Express	-	-	ditto	-	"	1861	Arthur Abraham and another	-	-	222	5	30	1½	10	4	290	489	180	iron.
2,153	43,696	Morocco	-	-	ditto	-	"	"	John Burns and others	-	-	275	5	36	2½	25	8	1,268	1,793	250	iron, screw.
2,154	15,700	Collier	-	-	ditto	-	"	1848	William Mories and another	-	-	127	7	20	2	10	5½	132	194	40	iron, screw.
2,155	43,709	Livorno	-	-	ditto	-	"	1862	R. B. Handyside and others	-	-	169	3	21	9	13	5	290	381	50	iron, screw.
2,156	43,705	China	-	-	ditto	-	"	"	James Burns and others	-	-	326	2	40	4½	19	3	1,540	2,529	550	iron, screw.
2,157	16,246	Damascus	-	-	ditto	-	"	1856	James & Alexander Allen	-	-	253	5	32	0	22	2	825	1,214	200	iron, screw.
2,158	43,711	Scotia	-	-	ditto	-	"	1862	James Burns and others	-	-	379	0	47	8	30	5	2,858	3,871	1,000	iron.
2,159	44,771	Pehlwan	-	-	ditto	-	"	"	John Fleming	-	-	110	3	19	0½	9	2	74	135	60	iron.
2,160	44,777	Man Zing	-	-	ditto	-	"	"	J. F. H. Trautman	-	-	210	0	27	6	13	9	419	621	200	iron.
2,161	6,358	Inverary Castle	-	-	ditto	-	"	1839	David Hutcheson and others	-	-	158	5	20	2	9	3	146	209	80	iron.
2,162	44,780	Clydesdale	-	-	ditto	-	"	1862	- ditto	-	-	180	2	24	1	13	2	254	403	120	iron, screw.
2,163	44,783	Two Sisters	-	-	ditto	-	"	"	Farlane McFarlane	-	-	62	7	17	2	6	8	36	46	20	iron, screw.
2,164	44,789	William Connal	-	-	ditto	-	"	"	John Hutchison	-	-	161	0	24	7	11	9½	268	339	60	iron, screw.
2,165	44,792	India	-	-	ditto	-	"	"	Calcutta and Burmah Steam Navigation Company.	-	-	230	0	30	2	19	0½	792	1,010	200	iron, screw.
2,166	44,796	Messina	-	-	ditto	-	"	"	R. B. Handyside and others	-	-	189	6	21	0	13	5	290	381	55	iron, screw.
2,167	44,798	Ava	-	-	ditto	-	"	"	Irrawaddy Flotilla and Burmese Steam Navigation Company (Limited).	-	-	141	4	23	3	11	9½	207	278	60	iron, screw.

Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	—
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
2,168	44,801	Kurrachee	Glasgow - 1862	1862	Calcutta and Burnah Steam Navigation Company.	185 0	25 5	Feet. 10 1/2.	395	510	120	iron, screw.
2,169	44,804	Penang	ditto	"	- ditto	218 8	28 0	16 6 1/2	531	699	120	iron, screw.
2,170	16,241	St. Elmo	ditto	1856	Thomas Meikle	161 3	22 1	11 6	181	266	60	iron, screw.
2,171	26,004	Excelsior	ditto	1856	John Hutchison	167 4	22 9 1/2	13 0	292	357	60	iron, screw.
2,172	44,811	Collina	ditto	1862	William Mories and another	135 9	19 7	10 7	176	234	60	iron, screw.
2,173	20,124	Sicilia	ditto	1861	John Hutchison	227 4	28 1	17 5	382	735	110	iron, screw.
2,174	44,818	Wolf	ditto	1863	J. Burns and others	242 7	27 2	13 8	443	670	310	iron.
2,175	44,819	Corsica	ditto	"	- ditto	224 2	32 2	24 0	681	1,134	200	iron, screw.
2,176	45,951	Rangatira	ditto	"	R. E. Shaw and others	144 8	20 6	9 7	175	218	60	iron, screw.
2,177	45,952	Genova	ditto	"	R. B. Handyside and others	178 0	22 1	18 5	300	391	80	iron, screw.
2,178	45,956	Alpha	ditto	"	Sir S. Cunard, Bart.	221 8	27 6	14 9	514	653	112	iron, screw.
2,179	29,718	Mariner	ditto	1861	A. McKinnon and another	81 3	16 5	9 0	22	68	28	
2,180	47,051	Victor	ditto	1863	J. Reid and others	88 9	17 6	8 9	24	82	48	
2,181	15,458	Acquila	ditto	1843	P. L. Henderson	127 4	16 5 1/2	7 6	45	95	60	iron.
2,182	45,964	Cheduba	ditto	1863	British India Steam Navigation Company	209 1	26 3 1/2	16 1	538	667	100	iron, screw.
2,183	45,965	Antona	ditto	"	D. Sloan and others	190 1	26 8 1/2	14 0	399	509	90	iron, screw.
2,184	45,976	Victory	ditto	"	Wemyss Bay Company (Limited)	176 7	17 6 1/2	6 6	80	125	75	iron.
2,185	21,381	Hero	ditto	1858	A. Watson and another	181 0	19 1 1/2	7 1 1/2	84	157	80	iron.
2,186	45,984	Britannia	ditto	1863	R. B. Handyside and others	261 5	33 1	21 6 1/2	1,118	1,392	360	iron, screw.
2,187	45,985	Bull Dog	ditto	"	J. M. Hall	152 5	22 0	11 6	104	247	140	iron.
2,188	45,988	Staffa	ditto	"	D. Hutchison and others	148 4	23 1 1/2	11 2 1/2	156	273	100	iron, screw.
2,189	45,992	Euphrates	ditto	"	British India Steam Navigation Company	208 7	28 3 1/2	16 5	488	650	120	iron, screw.
2,190	45,993	Orissa	ditto	"	- ditto	153 2	23 1 1/2	12 2	271	360	80	iron, screw.
2,191	45,997	Tripoli	ditto	"	J. Burns and others	292 3	38 2	26 5	1,458	2,061	280	iron, screw.
2,192	45,995	Comorin	ditto	"	British India Steam Navigation Company	176 3	25 2 1/2	14 1	342	453	80	iron, screw.
2,193	45,999	Princess Royal	ditto	"	J. Langlands and others	200 5	28 2 1/2	14 8	404	566	150	iron, screw.
2,194	47,818	Burmah	ditto	"	British India Steam Navigation Company	239 2	30 2	19 5	807	1,025	200	iron, screw.
2,195	17,874	Don Pedro	ditto	1856	R. B. Handyside and others	159 7	20 1	12 5	289	295	90	iron, screw.
2,196	42,542	Fairy	ditto	1861	J. Proudfoot and another	149 4	21 0	6 9 1/2	147	210	75	iron.
2,197	47,828	Andalusia	ditto	1863	W. Mories and another	137 2	19 8	11 7	211	274	50	iron, screw.
2,198	47,833	Caledonia	ditto	"	R. B. Handyside and others	261 5	33 1	21 6	1,119	1,393	360	iron, screw.
2,199	47,841	Arabia	ditto	"	British India Steam Navigation Company	239 2	30 2	19 0 1/2	807	1,027	200	iron, screw.
2,200	8,098	Irishman	ditto	1854	A. A. Laird	170 3	21 2	12 4	238	309	60	iron, screw.
2,201	6,389	Lochfine	ditto	"	Archibald Denny and others	76 6	18 7	7 7	43	72	18	iron, screw.
2,202	47,848	Adele	ditto	1864	H. L. Seligmann	170 9	24 1	12 0	274	342	60	iron, screw.
2,203	47,845	Peruvian	ditto	1864	James Allan and another	312 1	38 4	17 0	1,899	2,549	330	iron, screw.
2,204	47,848	Albion	ditto	1863	James Galbraith	218 3	27 2	16 2 1/2	458	668	180	iron, screw.
2,205	47,847	Yuen Tze Fee	ditto	"	J. F. H. Trautmann	185 5	26 1	11 6	316	422	100	iron, screw.

2,206	45,698	Blanche -	-	-	ditto	-	1863	Matthew Langlands and others	-	-	146	1	20	5	12	0	174	234	40	iron, screw.
2,207	46,908	Greenock	-	-	ditto	-	1864	J. B. Murdoch and others	-	-	64	8	17	8	9	1½	57	70	86	iron, screw.
2,208	46,901	Busheer -	-	-	ditto	-	"	British India Steam Navigation Company (Limited).	-	-	216	0	29	1½	16	7½	617	792	180	iron, screw.
2,209	23,056	Dieppe -	-	-	ditto	-	1865	Peter Denny	-	-	181	6	19	8	10	7	170	270	150	iron.
2,210	47,849	Penguin -	-	-	ditto	-	1864	John Burns and others	-	-	220	6	28	5	14	4½	519	680	180	iron, screw.
2,211	48,906	Flying Spray	-	-	ditto	-	"	J. P. Kidston and others	-	-	79	0	17	4	9	0	20	60	80	iron, screw.
2,212	48,908	Jamaica Packet	-	-	ditto	-	"	James Carson and another	-	-	138	7	21	0	10	6	152	208	55	iron, screw.
2,213	16,868	Flying Fish	-	-	ditto	-	1865	Henry Crawford	-	-	108	0	13	7	-	-	60	98	40	iron, screw.
2,214	48,909	Emma -	-	-	ditto	-	1864	H. L. Seligmann	-	-	165	2	21	1½	12	6½	211	283	60	iron, screw.
2,215	43,707	Jessie Brown	-	-	ditto	-	1861	Neil, Robson, and another	-	-	120	7	20	1	8	7½	117	147	80	iron, screw.
2,216	48,917	Argyle -	-	-	ditto	-	1864	William Dick and another	-	-	85	8	19	0	8	7	69	104	25	iron, screw.
2,217	48,915	Petro -	-	-	ditto	-	"	Robert Binning	-	-	66	5	14	5	4	7½	29	85	10	iron, screw.
2,218	48,921	Little Hattie	-	-	ditto	-	"	Henry Lafone	-	-	226	1	26	1½	10	6½	247	480	180	iron, screw.
2,219	26,114	Sydney -	-	-	ditto	-	1852	British India Steam Navigation Company (Limited).	-	-	227	0	34	0	24	0	762	1,214	300	iron, screw.
2,220	46,929	Ta-Pang-Nyo -	-	-	ditto	-	1864	J. F. H. Trautmann	-	-	220	2	29	1	14	9	617	669	150	iron, screw.
2,221	18,196	Lady Franklin -	-	-	ditto	-	1860	John Aiton	-	-	119	6	19	2	10	8	87	146	80	iron, screw.
2,222	26,471	Australian	-	-	ditto	-	1852	British India Steam Navigation Company (Limited).	-	-	225	0	34	0	22	5	725	1,208	300	iron, screw.
2,223	48,931	Eagle -	-	-	ditto	-	1864	William Buchanan	-	-	204	0	20	2	7	3½	98	188	108	iron.
2,224	48,928	Norseman	-	-	ditto	-	"	James McFarlane and another	-	-	81	7	18	1½	8	0	62	77	18	iron, screw.
2,225	48,928	Madras -	-	-	ditto	-	"	British India Steam Navigation Company (Limited).	-	-	226	2	28	3	15	2	545	680	125	iron, screw.
2,226	48,932	Iona -	-	-	ditto	-	"	David Hutchison and others	-	-	255	6	25	6	9	0	191	398	180	iron.
2,227	48,926	Lennox -	-	-	ditto	-	"	Archibald Denny and others	-	-	139	4	14	1	6	5	65	87	40	iron.
2,228	48,927	Leven -	-	-	ditto	-	"	- ditto	-	-	139	4	14	1	6	5	65	87	40	iron.
2,229	48,986	Punjaub -	-	-	ditto	-	"	British India Steam Navigation Company (Limited).	-	-	289	1	80	2	19	0	810	1,030	200	iron, screw.
2,230	48,944	St. David	-	-	ditto	-	"	James Allan and another	-	-	272	2	34	2	22	0	1,229	1,516	150	iron, screw.
2,231	46,946	Flying Mist	-	-	ditto	-	"	J. P. Kidston and others	-	-	90	8	17	8	9	2½	40	95	65	iron.
2,232	50,332	Clara -	-	-	ditto	-	"	Benjamin Simons	-	-	165	4	20	9	12	0	220	291	63	iron, screw.
2,233	50,338	Banshee -	-	-	ditto	-	"	J. T. Lawrence	-	-	262	6	31	2	11	2	438	628	250	steel.
2,234	50,334	Alexander	-	-	ditto	-	"	Charles Henderson	-	-	165	0	23	1	7	6½	195	251	60	iron.
2,235	50,335	Armstrong	-	-	ditto	-	"	James Cameron	-	-	232	7	26	3	10	1	214	396	200	iron.
2,236	50,836	Clutha -	-	-	ditto	-	"	David Sloan and others	-	-	190	8	26	9	14	0	897	508	90	iron, screw.
2,237	50,341	Michel -	-	-	ditto	-	"	W. R. Coulburn	-	-	165	0	23	1	7	6½	195	251	60	iron.
2,238	50,339	Rhoda -	-	-	ditto	-	"	John Jack	-	-	65	0	13	5½	4	9	28	83	12	iron, screw.
2,239	50,337	Cashmere	-	-	ditto	-	"	British India Steam Navigation Company (Limited).	-	-	239	1	30	2	19	0	810	1,028	200	iron, screw.
2,240	50,345	Arran Castle	-	-	ditto	-	"	Alexander Watson	-	-	220	6	21	0	7	6	121	224	130	iron.
2,241	19,494	Carradale	-	-	ditto	-	1867	Robert Tennant	-	-	80	3	15	0	6	6	34	61	24	iron, screw.
2,242	50,347	Caroline -	-	-	ditto	-	1864	James Carlin	-	-	226	3	28	2	13	0	404	633	200	iron.
2,243	48,920	Vivid -	-	-	ditto	-	"	J. M. Campbell and another	-	-	138	3	18	2	7	8	99	167	80	iron.
2,244	50,353	Evelyn -	-	-	ditto	-	"	Donald McGregor	-	-	221	0	28	2	9	8½	284	447	180	iron.
2,245	50,354	Moravian	-	-	ditto	-	"	James Allan and another	-	-	320	9	39	0	17	4½	1,598	2,246	400	iron, screw.
2,246	50,352	Flying Meteor	-	-	ditto	-	"	J. P. Kidston and others	-	-	111	6	18	6	9	7	47	127	65	iron.
2,247	50,351	Flying Childers	-	-	ditto	-	"	- ditto	-	-	88	4	17	9	9	2½	29	84	60	iron.
2,248	50,360	Mary and Ella	-	-	ditto	-	"	Andrew Stewart	-	-	221	3	23	1	10	4½	242	352	130	iron.

Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—*continued*.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	—
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
2,249	28,482	Falcon	Glasgow	1864	A. A. Laird	174 4	24 1	Feet. 10 1/2.	265	390	100	iron, screw.
2,250	50,355	Susan Birne	ditto	1864	J. T. Lawrence	252 2	31 1	11 0 1/2	446	637	250	steel.
2,251	50,857	Cuba	ditto	"	Sir S. Cunard, Bart., and others	338 2	42 4	19 4 1/2	1,533	2,668	560	iron, screw.
2,252	47,170	Conqueror	ditto	"	G. J. Kidston	126 4	20 0	11 4	83	181	95	iron.
2,253	50,364	Emily	ditto	"	John Palliser	221 0	25 2	11 5	243	443	250	iron.
2,254	50,363	Emily	ditto	"	James Carlin	255 5	34 1 1/2	16 4 1/2	736	1,100	300	iron.
2,255	50,362	Bertha	ditto	"	H. L. Seligmann	170 6	25 2	12 4 1/2	262	371	90	iron, screw.
2,256	50,365	Napoli	ditto	"	R. B. Handyside and others	206 0	26 1	16 6 1/2	486	635	96	iron, screw.
2,257	50,368	Florence	ditto	"	E. L. Gilborne	252 3	31 2 1/2	11 5	469	660	250	iron.
2,258	50,369	Edith	ditto	"	William Hamilton, junior	218 5	25 2	12 4	387	542	150	iron, screw.
2,259	50,370	Aleppo	ditto	1865	Sir Samuel Cunard, Bart., and others	292 5	38 2	26 2	1,459	2,057	280	iron, screw.
2,260	50,372	Saltee	ditto	"	J. P. Kidston and others	181 5	24 6	13 7	293	396	80	iron, screw.
2,261	19,724	Scottish Maid	ditto	1864	James McFarlane and others	68 2	14 7	7 7	11	41	25	"
2,262	47,817	Tuskar	ditto	"	J. P. Kidston and others	181 5	24 6	13 7	294	397	80	iron, screw.
2,263	50,376	Undine	ditto	"	James & P. L. Henderson	200 0	18 5 1/2	7 7 1/2	94	172	90	iron.
2,264	50,373	Roma	ditto	1865	R. B. Handyside and others	205 8	25 0	16 6 1/2	509	657	96	iron, screw.
2,265	50,377	Imogene	ditto	"	James Galbraith and another	226 1	28 2	13 0	398	633	200	iron.
2,266	42,537	Sultan	ditto	"	Alexander Williamson	176 0	16 6 1/2	7 2 1/2	79	124	60	iron.
2,267	52,583	Ototosama	ditto	1861	J. C. Fraser	122 8	15 2 1/2	7 9 1/2	71	95	30	iron, screw.
2,268	52,582	Myrtle	ditto	1865	John Cameron and another	134 7	20 1	7 9	123	159	35	iron, screw.
2,269	16,485	United Kingdom	ditto	1857	R. B. Handyside and others	245 0	32 0	21 9	1,067	1,255	300	iron, screw.
2,270	50,378	Turifa	ditto	1865	Sir Samuel Cunard, Bart., and others	292 5	38 2	26 2 1/2	1,459	2,058	280	iron, screw.
2,271	52,587	Corea	ditto	"	Peter Denny	209 9	27 2	14 4 1/2	648	874	150	iron, screw.
2,272	52,586	Asia	ditto	"	British India Steam Navigation Company (Limited).	274 8	34 2	17 1 1/2	1,208	1,579	250	iron, screw.
2,273	52,589	Louisa Wallace	ditto	"	E. L. Gilborne	289 4	28 2	11 4 1/2	373	534	250	iron.
2,274	52,590	Thomas Bazley	ditto	"	West Africa Company (Limited)	166 7	21 2	8 0	132	227	90	iron.
2,275	44,794	Lyle	ditto	1862	Wordsworth Harrison and others	63 0	11 9	5 0 1/2	26	32	14	iron, screw.
2,276	28,895	Albion	ditto	1860	P. L. Henderson	165 0 1/2	24 2	11 7 1/2	160	307	150	iron.
2,277	30,670	Mahanuddy	ditto	1846	Irrawaddy Flotilla and Burmese Steam Navigation Company (Limited).	138 5	23 3	8 0	154	239	60	iron.
2,278	30,671	Lord William Bentinck	ditto	1842	- ditto	130 5	23 5	7 0	131	198	-	iron.
2,279	30,672	Nerbudda	ditto	"	- ditto	151 0	25 0	6 5	162	229	-	iron.
2,280	52,585	Larga	ditto	1864	Wemyss Bay Steam Boat Company (Limited).	161 4	10 1	7 9	88	152	60	iron.
2,281	52,595	Kyles	ditto	1865	- ditto	219 4	20 2	8 4	171	252	120	iron.
2,282	52,596	Valencia	ditto	"	William Morris and another	139 6	19 6	11 8 1/2	191	254	40	iron, screw.
2,283	22,863	Gny Fawkes	ditto	1849	Thomas Buchanan and another	72 4 1/2	14 8	8 2	45	65	13	iron, screw.
2,284	52,593	Flying Foam	ditto	1865	J. P. Kidston and others	96 5	17 2	8 3	26	88	50	iron.

2,285	41,027	Damoodah	-	-	ditto	-	1865	1842	Irrawaddy Flotilla and Burmese Steam Navigation Company (Limited).	155	0	24	3	7	0	179	226	60	iron.
2,286	52,601	Bull Dog	-	-	ditto	-	"	1865	Robert Hannan and another	90	0	20	1	6	2	78	91	12	iron, screw.
2,287	52,602	Pegu	-	-	ditto	-	"	"	Irrawaddy Flotilla and Burmese Steam Navigation Company (Limited).	183	5	25	2	14	0	312	444	120	iron, screw.
2,288	52,603	Japan	-	-	ditto	-	"	"	John Bell	178	0	25	0	9	0	256	368	98	iron.
2,289	52,605	Terrier	-	-	ditto	-	"	"	Robert Hannan and another	90	0	20	1	6	2	79	91	12	iron, screw.
2,290	52,604	Thistle	-	-	ditto	-	"	"	John Cameron and another	198	5	25	2	13	1	302	444	140	iron, screw.
2,291	52,606	Griffin	-	-	ditto	-	"	"	James Baird	155	2	21	0	12	5	150	242	90	iron, screw.
2,292	52,607	Hibernia	-	-	ditto	-	"	"	R. B. Handyside and others	278	2	33	7	22	3	1,317	1,616	350	iron, screw.
2,293	52,609	Koning Willem III.	-	-	ditto	-	"	"	Netherlands India Steam Navigation Company (Limited).	226	0	31	1	13	6	623	774	200	screw.
2,294	52,608	Thales	-	-	ditto	-	1864	1864	Peter Denny and others	231	0	31	4	16	6½	775	1,154	200	iron, screw.
2,295	52,610	Gnu	-	-	ditto	-	1865	1865	T. F. Muirhead	72	0	18	0½	8	1½	33	67	40	iron, screw.
2,296	52,612	William Taylor	-	-	ditto	-	"	"	Peter Brash and another	111	5	18	8	10	6	118	154	35	iron, screw.
2,297	52,613	Isabel	-	-	ditto	-	"	"	James McLeish	53	9	9	8	6	5	12	17	10	iron, screw.
2,298	52,614	Bute	-	-	ditto	-	"	"	Wemyss Bay Steam Boat Company (Limited).	219	4	20	2	8	4	171	251	120	iron.
2,299	52,615	Rothesay Castle	-	-	ditto	-	"	"	Alexander Watson and others	208	0	19	3½	7	9½	113	203	88	iron.
2,300	52,617	Louisa	-	-	ditto	-	"	"	James McLeish	52	5	10	0	4	6	12	15	12	iron, screw.
2,301	52,618	Albion	-	-	ditto	-	"	"	James Reid and others	160	5	20	2	10	4	158	224	60	iron, screw.
2,302	52,619	Buffalo	-	-	ditto	-	"	"	John Burns and others	241	1	26	3	13	4	479	675	280	iron.
2,303	52,616	Sarah Garcia	-	-	ditto	-	"	"	Benjamin Simons and others	175	4	22	6½	13	7½	297	391	55	iron, screw.
2,304	52,621	Hercules	-	-	ditto	-	"	"	Walter Powell and another	170	2	25	0½	11	6	202	341	120	iron, screw.
2,305	52,627	Whiteinch	-	-	ditto	-	"	"	H. C. Drinkwater	192	3	27	2½	9	0½	207	384	200	iron, screw.
2,306	52,626	Java	-	-	ditto	-	"	"	James Burns and others	337	1	43	9	19	4	1,761	2,696	600	iron, screw.
2,307	52,629	Bassein	-	-	ditto	-	"	"	Irrawaddy Flotilla and Burmese Steam Navigation Company (Limited).	125	4	21	2	10	5½	93	184	110	iron.
2,308	53,366	Ciane	-	-	ditto	-	"	"	David Rowan and another	155	5	20	8½	8	5½	196	247	60	iron, screw.
2,309	53,368	Mahratta	-	-	ditto	-	"	"	British India Steam Navigation Company (Limited).	227	4	28	3	16	0	585	742	120	iron, screw.
2,310	53,367	Valetta	-	-	ditto	-	"	"	R. B. Handyside and others	205	8	25	0	16	5	507	656	96	iron screw.
2,311	53,371	Tornado	-	-	ditto	-	"	"	James Galbraith and another	240	0	33	0	18	8½	496	963	350	iron, screw.
2,312	52,630	Conqueror	-	-	ditto	-	"	"	J. P. Kidston and others	136	6	20	2½	11	6	129	190	120	iron.
2,313	53,369	Maraban	-	-	ditto	-	"	"	British India Steam Navigation Company (Limited).	198	4	26	0½	14	5½	390	515	110	iron, screw.
2,314	48,943	Ptarmigan	-	-	ditto	-	1864	1864	Alexander Collicie	231	1	28	2	9	8½	284	447	180	iron.
2,315	18,205	Arbutus	-	-	ditto	-	1854	1854	A. A. Laird	179	8	22	6½	12	3	237	348	75	iron, screw.
2,316	53,374	Llama	-	-	ditto	-	1865	1865	John Burns and others	241	1	26	3	13	4	479	675	280	iron.
2,317	53,372	Brazil	-	-	ditto	-	"	"	James Galbraith and another	251	0	30	1	15	0	459	776	300	iron, screw.
2,318	52,628	Maighthead na Her-radh.	-	-	ditto	-	"	"	Earl of Dunmore	66	0	16	0½	8	0	27	39	15	iron, screw.
2,319	53,377	Albert	-	-	ditto	-	"	"	James & John Hay	65	0	17	0½	6	6	42	52	20	iron, screw.
2,320	53,376	Venezia	-	-	ditto	-	"	"	R. B. Handyside and others	205	5	25	0	16	5	508	656	96	iron, screw.
2,321	53,375	Kinsale	-	-	ditto	-	"	"	J. P. Kidston and others	197	8	26	1	14	5	383	500	96	iron, screw.
2,322	51,829	Fannie	-	-	ditto	-	1859	1859	Caledonian Railway Company	220	6	30	8	14	3	455	699	250	iron.
2,323	53,378	Malta	-	-	ditto	-	1865	1865	John Burns and others	303	1	39	3½	25	0	1,541	2,132	280	iron, screw.
2,324	53,379	Jasper	-	-	ditto	-	"	"	William Robertson	65	5	16	1	5	7	36	42	14	iron, screw.
2,325	53,380	Cyclone	-	-	ditto	-	"	"	J. M. Hall and another	160	8	26	2	12	5½	157	346	250	iron.

Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNER.	DIMENSIONS.			TONNAGE.		Horse Power.	—
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
2,326	22,511	*Rob Roy	Grangemouth 1850	1847	Carron Company	68 5	13 1	6 8	20	40	22	iron, screw.
2,327	13,542	Grange	ditto 1856	1856	ditto	178 6	25 1½	14 1	268	408	90	iron.
2,328	18,240	Venus	ditto 1857	1857	John Strong and others	25 4	15 7	8 4	11	53	24	
2,329	25,090	Harmony	ditto 1859	1859	G. G. Mackay	75 0	15 7½	8 3	13	54	26	
2,330	28,076	Carron	ditto 1860	1860	Carron Company	181 0	25 7	14 0	256	447	106	iron, screw.
2,331	28,677	Thames	ditto	"	ditto	180 5	26 1	14 5½	840	454	106	iron, screw.
2,332	28,678	Pet	ditto 1861	1861	J. T. Salvesen and others	79 6	16 0	8 9	19	43	30	
2,333	28,679	Forth	ditto 1862	1862	Carron Company	188 1	27 1½	14 8	868	499	125	iron, screw.
2,334	45,645	Clutha	ditto 1864	1864	ditto	191 5	27 5½	15 0	394	534	130	iron, screw.
2,335	23,402	Alice	ditto 1865	1864	John Reid	152 5	23 0	14 9	226	332	70	iron, screw.
2,336	45,646	Cupid	ditto	1865	John Strong and others	80 4	17 6	9 2	20	74	30	
2,337	45,647	Express	ditto	"	G. G. Mackay and others	80 4	17 4	8 9	19	70	32	
2,338	45,648	Estella	ditto	"	C. T. S. B. Reynardson	58 0	10 3½	5 0	10	17	11	screw.
2,339	45,649	Avon	ditto	"	Carron Company	192 3	28 0	14 9	427	572	120	iron, screw.
2,340	-	*Lord Harris	Greenock 1853	1853	J. Campbell and others	148 4	16 5	7 1	110	164	60	iron.
2,341	7,487	*Powerful	ditto 1854	1848	J. Park and others	73 7	15 6	8 7	17	68	35	
2,342	5,848	Vixen	ditto	"	Alexander Ferguson and others	73 0	14 6	8 4	8	56	30	
2,343	-	Stamboul	ditto 1855	1854	Henry Lamb and others	181 6	19 4	9 7	149	202	-	iron, screw.
2,344	7,409	Alma	ditto	1855	Duncan Stewart	157 3	16 2	7 4	66	123	80	
2,345	22,507	Helen McGregor	ditto 1856	1848	D. Robertson and others	87 3	17 9	8 3	19	74	40	
2,346	7,517	Queen of Sheba	ditto 1857	1852	J. Park and others	79 1	15 8	8 7	12	59	40	
2,347	21,571	Pearl	ditto 1858	1858	John Hendry	86 0	16 7	8 0	17	72	40	
2,348	27,268	William Bromley	ditto 1859	1859	W. E. Cook and another	162 2	17 1	6 7	95	151	70	iron.
2,349	28,227	Gem	ditto	"	A. R. Orr and others	81 8	16 4	8 5	16	64	30	
2,350	28,966	Jane Cochran	ditto	1860	John & James Cochran	73 7	18 4	9 3	60	77	16	screw.
2,351	28,967	James	ditto	"	Robert Henry	66 8	16 4	5 2	33	39	13	iron, screw.
2,352	13,537	Samson	ditto 1862	1846	William Liddell and others	71 9	17 0	8 7½	15	61	32	
2,353	45,255	Barwon	ditto 1863	1863	R. Little and others	175 0	22 7	13 5	311	406	90	iron, screw.
2,354	45,257	Ruby	ditto	"	J. Hendry and others	104 8	19 0	10 2	41	114	50	
2,355	45,258	Jaspar	ditto	"	ditto	103 2	18 9	9 6	42	123	50	iron.
2,356	45,266	Constance	ditto 1864	"	Donald MacGregor	201 4	20 1½	9 4	163	255	100	iron.
2,357	49,535	Macedon	ditto	1864	Robert Little and others	176 9	22 7	13 5½	314	410	90	iron.
2,358	49,537	Elsie	ditto	"	Donald MacGregor	201 4	20 1½	9 5	170	263	120	iron, screw.
2,359	49,510	Commodore	ditto	"	William Liddell and others	107 8	19 0	9 8	43	114	60	iron.
2,360	19,382	John and Mary	ditto	"	John Carswell and others	70 9	14 0	7 4	11	44	20	
2,361	7,486	Defiance	ditto	1857	James Park and others	63 4	17 1	9 3	17	74	50	
2,362	6,362	Vigilant	ditto	1854	ditto	77 9	16 9	9 0	8	67	40	
2,363	49,649	Spartan	ditto 1865	1848	H. J. Neil and others	176 3	23 5	13 5	296	390	90	iron, screw.

RETURN of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.	—
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
2,409	21,291	Benwell -	Leith -	1864	1858	Feet. 104½.	Feet. 104½.	Feet. 104½.	10	38	18	iron, screw.
2,410	1,389	Eagle -	ditto -	"	1852	67 4½	13 0½	7 3½	365	500	120	iron, screw.
2,411	29,120	Battalion -	ditto -	"	1861	197 5	25 1	14 0	537	678	70	iron, screw.
2,412	47,249	Warsaw -	ditto -	"	1864	208 8	28 2	15 6	537	678	70	iron, screw.
2,413	51,062	Dantzic -	ditto -	"	"	184 6	25 2	14 0	368	470	90	iron, screw.
2,414	1,385	Times -	ditto -	"	"	232 6	29 0	14 9½	539	686	115	iron, screw.
2,415	51,064	Marie Stuart -	ditto -	"	1864	160 4	21 0	13 5	205	306	70	iron, screw.
2,416	51,068	Stettin -	ditto -	"	"	211 7	24 9	13 8	468	565	140	iron, screw.
2,417	44,960	Fingal -	ditto -	"	1865	222 0	29 1	15 0	558	706	115	iron, screw.
2,418	6,341	Ossian -	ditto -	"	1855	228 7	28 1	16 9	614	764	90	iron, screw.
2,419	43,501	Oscar -	ditto -	"	"	213 0	26 3	16 5	500	721	120	iron, screw.
2,420	44,951	Morna -	ditto -	"	1862	230 8	30 4	16 5	600	806	200	iron, screw.
2,421	51,070	Gem -	ditto -	"	"	234 6	29 8	17 0	595	888	175	iron, screw.
2,422	10,286	Edina -	ditto -	"	1865	80 5	17 7	9 5	19	79	42	iron, screw.
2,423	52,868	Paris -	ditto -	"	"	166 3	23 7	12 9	240	338	75	iron, screw.
2,424	52,867	Dresden -	ditto -	"	"	226 7	28 0	15 7	569	708	114	iron, screw.
2,425	52,869	Staffa -	ditto -	"	"	225 0	29 7	15 5	596	751	120	iron, screw.
2,426	52,871	Petersburg -	ditto -	"	"	230 3	28 2	16 0	595	746	120	iron, screw.
2,427	52,870	Pearl -	ditto -	"	"	233 7	33 7	20 7	1,340	1,566	180	iron, screw.
2,428	24,181	Nymph -	ditto -	"	1851	82 7	17 4	9 1	18	73	40	iron.
2,429	52,872	Kinloch -	ditto -	"	1865	113 8	17 9	7 9	57	91	45	iron.
2,430	4,928	Waterwitch -	ditto -	"	1848	216 0	36 2	8 6	334	585	260	iron.
2,431	52,875	Verona -	ditto -	"	1865	68 2	15 2	7 8	5	46	30	iron, screw.
2,432	52,609	Florence -	ditto -	"	"	233 5	31 3	16 0	686	862	135	iron, screw.
2,433	52,877	Citadel -	ditto -	"	"	189 4	25 5	14 5	370	497	80	iron, screw.
2,434	52,879	Kinghorn -	ditto -	"	"	212 8	28 2	17 0	584	741	95	iron, screw.
2,435	44,298	Bob Chambers -	Montrose -	1862	Montrose Steam Tug Company (Limited)	215 5	27 3	15 1	587	669	150	iron, screw.
2,436	45,614	Teazer -	ditto -	1863	- ditto -	80 6	16 8	8 8	18	67	29	
2,437	7,143	Heroules -	Perth -	1865	- ditto -	79 3	16 9	9 1	22	69	28	
2,438	19,728	*Merlin -	Port Glasgow	1851	James Easson -	80 5	17 1	8 4	22	63	30	
2,439	10,957	Conquest -	ditto -	1857	- ditto -	150 8	16 1	8 0	104	159	80	iron.
2,440	19,169	Beaver -	ditto -	1858	J. O. Lever -	68 6	16 8	8 4	20	67	32	
2,441	20,522	Islesman -	ditto -	1861	D. Robertson and others -	179 8	19 4	7 2	45	72	72	
2,442	44,295	Gloriana -	ditto -	1864	John Aiton -	130 5	19 8	11 4	116	172	80	iron, screw.
2,443	8,754	Brothers -	ditto -	"	William Laing -	80 0	16 2	8 9	22	68	28	
					John Laird -	71 5	14 9	8 0	18	57	20	

Return of Steam Vessels Registered in the United Kingdom on or before the 1st day of January 1866, &c.—continued.

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	DIMENSIONS.			TONNAGE.		Horse Power.
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.	
2,487	29,423	Citizen -	Cork - 1861	1861	Selby Clare and others	Feet. 10 1/2.	Feet. 10 1/2.	Feet. 10 1/2.	73	129	80 iron.
2,488	29,427	Lee -	ditto -	"	- ditto -	160 0	17 7	7 1	73	129	80 iron.
2,489	28,337	Brunel -	ditto - 1862	1860	George Sutton & Son -	82 0	17 4	9 4	21	81	35
2,490	44,406	Commissioner -	ditto - 1863	1862	Cork Harbour Commissioners	108 6	18 2	7 3	42	92	40 iron.
2,491	29,535	Pilot -	ditto -	1861	A. Sutton and another	88 4	18 1	9 5	33	90	40
2,492	43,645	George P. Bidder	ditto - 1864	1862	George Sutton -	82 3	17 4	9 0 1/2	27	78	35
2,493	44,413	Mosquito -	ditto -	1864	George Robinson -	101 5	18 6	8 1	44	100	70 iron.
2,494	44,416	United States -	ditto -	"	John Dawson and others	106 0	18 9	10 0	52	126	70 iron.
2,495	44,417	Lord Clyde -	ditto -	"	Robert Seaton -	103 8	18 5	9 8	34	115	50 iron.
2,496	28,670	Scottish Chief -	ditto - 1865	1865	J. W. Savage -	74 1	15 4	8 1	13	50	26
2,497	52,552	Chloe -	ditto -	"	A. W. Lawe -	80 6	14 8	7 7	46	70	20 iron, screw.
2,498	16,801	Faugh a Ballagh	Drogheda - 1857	1844	Drogheda Steam Packet Company	177 8	31 8	14 0	296	560	392 iron.
2,499	16,804	Brian Boroinhe	ditto -	1846	- ditto -	180 0	27 1	15 1	266	533	310 iron.
2,500	16,807	St. Patrick -	ditto -	1845	- ditto -	184 3	26 4	14 7	269	571	336 iron.
2,501	16,806	Leinster Lass -	ditto -	1849	- ditto -	200 0	27 4	14 7	308	629	372 iron.
2,502	25,060	Colleen Bawn -	ditto - 1862	1862	- ditto -	221 4	28 1	15 3	440	697	400 iron.
2,503	8,794	Duke of Cambridge -	Dublin - 1838	1838	City of Dublin Steam Packet Company	158 1	23 5	16 5	265	498	220
2,504	8,751	Royal William	ditto -	1837	- ditto -	172 5	24 6	16 6	283	525	270
2,505	8,783	Albert -	ditto - 1845	1845	- ditto -	146 5	23 0	13 6	210	450	160 iron.
2,506	8,807	*Emerald -	ditto - 1846	1846	- ditto -	180 0	20 0	12 3	180	256	60 iron, screw.
2,507	13,400	*Pilot -	ditto -	1843	Thomas Joliffe -	84 2	16 7	9 0	39	109	60
2,508	8,785	*Diamond -	ditto -	1846	City of Dublin Steam Packet Company	180 0	20 0	12 5	184	256	60
2,509	8,808	*Fairy -	ditto - 1849	1849	- ditto -	129 0	16 3	8 3	81	153	65 iron.
2,510	8,787	Eblana -	ditto -	"	- ditto -	205 5	25 2	15 7	304	572	350 iron.
2,511	8,786	Duchess of Kent	ditto -	1838	- ditto -	155 2	23 0	15 0	217	411	250
2,512	8,788	Prince -	ditto - 1851	1839	Dublin and Liverpool Steam Ship Building Company.	164 9	23 6	16 2	303	536	270
2,513	8,789	Princess -	ditto -	"	- ditto -	165 9	23 7	16 0	293	520	270
2,514	8,810	Trafalgar	ditto -	1848	- ditto -	189 0	28 5	17 8	365	677	350 iron.
2,515	12,225	*Erin-go-Bragh -	ditto -	1840	- ditto -	126 4	22 4	10 9	232	324	100 iron.
2,516	8,790	Prince of Wales	ditto -	1846	- ditto -	174 1	21 6	11 4	205	340	80 iron.
2,517	8,811	Prince Arthur -	ditto -	1851	City of Dublin Steam Packet Company	195 0	23 2	12 3	204	378	220 iron.
2,518	523	Duke of Cornwall	ditto - 1852	1842	J. Ennis and others	170 8	26 4	17 0	325	607	360
2,519	13,694	Foyle -	ditto -	1848	- ditto -	196 5	25 8	16 8	444	704	400 iron.
2,520	12,348	*Adeline -	ditto -	1828	C. Pearson -	70 5 in.	17 11 in.	10 9 in.	35	67	40 iron.
2,521	8,778	St. Columba -	ditto - 1854	1847	City of Dublin Steam Packet Company	205 3	26 4	15 1	457	653	375 iron, screw.
2,522	8,691	*Standard -	ditto - 1855	1854	J. Stirling and another	174 5	24 9	13 7	394	422	100

RETURN of Steam Vessels registered in the United Kingdom on or before the 1st day of January 1866, &c.—*continued.*

No.	Official Number.	VESSELS' NAMES.	Port and Date of Registry.	Date of Build.	REGISTERED OWNERS.	D I M E N S I O N S.			T O N N A G E.		Horse Power.	—
						Length.	Breadth.	Depth of Hold.	Exclusive of Engine Room.	Gross Tonnage.		
2,563	1,541	Shamrock	Londonderry	1847	Glasgow and Londonderry Steam Packet Company.	Feet. 10ths. 186 5	Feet. 10ths. 25 9	Feet. 10ths. 16 5	325	618	300	
2,569	2,362	*William McCormick	ditto	1854	Londonderry Steam Boat Company	213 5	26 6	16 1	353	685	320	iron.
2,570	13,531	Enniskillen	ditto	1861	-	212 6	25 9	-	464	663	300	
2,571	27,643	Lion	ditto	1863	W. Coppin	106 2	18 0	10 0	59	121	60	iron.
2,572	29,045	Alexandra	ditto	1864	-	107 6	15 7	8 0	56	92	65	
2,573	29,048	Pioneer	ditto	1865	James Kelly	57 0	14 1	7 7	33	45	12	screw.
2,574	19,101	*Annabro'	Newry	1855	Charles Murland	94 6	17 2	8 8	62	106	-	
2,575	25,063	Robert Burns	ditto	1859	Dundrum and Newcastle Steam Packet Company.	106 0	18 5	8 0	59	118	40	iron, screw.
2,576	11,564	Mystery	ditto	"	Dundalk Steam Packet Company	143 3	19 2	10 8	134	197	40	iron, screw.
2,577	27,712	Ranger	ditto	1862	W. H. Carvill and others	85 0	16 9	9 2	17	75	35	
2,578	20,516	*Commerce	Sligo	1843	William Middleton and others	74 8	15 8	7 6	44	74	45	
2,579	12,855	*Janet	ditto	1854	Middleton and Pollexfen	76 2	10 5	6 3	34	46	18	screw.
2,580	18,440	Liverpool	ditto	1865	Sligo Steam Navigation Company (Limited)	199 1	26 3	13 2	356	488	140	iron, screw.
2,581	12,659	Sligo	ditto	"	-	163 9	22 0	11 0	192	282	65	iron, screw.
2,582	341	*Diana	Waterford	1849	Malcomson Brothers	183 2	23 9	13 6	390	527	100	iron.
2,583	578	*Citizen	ditto	"	-	140 6	19 3	12 0	167	236	30	iron.
2,584	6,423	*Duncannon	ditto	1850	Waterford Commercial Steam Navigation Company.	109 8	18 2	9 3	71	139	65	iron.
2,585	67	*Dublin	ditto	"	Malcomson Brothers	146 2	19 2	12 1	241	330	28	iron, screw.
2,586	64	*Magnet	ditto	1852	-	187 0	23 9	13 6	371	529	140	iron.
2,587	5	*Ceres	ditto	"	-	199 0	23 4	14 7	382	581	100	iron, screw.
2,588	66	*Lion	ditto	1853	-	215 4	25 4	14 9	551	729	250	iron.
2,589	4	*Vesta	ditto	"	-	199 9	24 7	14 6	430	616	100	iron, screw.
2,590	14,204	*Ranger	ditto	1854	-	181 0	20 0	13 6	308	407	40	iron, screw.
2,591	14,218	Shamrock	ditto	1855	Waterford Commercial Steam Navigation Company.	130 7	17 4	8 8	136	191	80	iron.
2,592	8,589	Brenda	ditto	1856	Malcomson Brothers	212 0	25 0	17 0	601	772	120	iron, screw.
2,593	8,591	Minna	ditto	"	C. K. Prieau	212 0	26 0	17 0	615	774	264	iron, screw.
2,594	8,600	Aurora	ditto	"	Malcomson Brothers	205 5	26 0	15 2	401	589	130	iron, screw.
2,595	20,790	Pouona	ditto	1859	D. Malcomson and others	251 5	29 0	20 8	993	1,225	250	iron, screw.
2,596	27,846	Una	ditto	"	-	250 7	30 2	20 8	1,006	1,236	250	iron, screw.
2,597	27,847	Gipsy	ditto	"	William Malcomson and others	205 8	30 2	16 9	470	691	250	iron, screw.
2,598	199	Earl of Auckland	ditto	1860	-	163 0	25 0	11 7	215	316	60	iron, screw.
2,599	27,350	Zephyr	ditto	"	-	209 7	26 3	14 9	463	679	250	iron, screw.

2,600	28,900	Beta	-	-	ditto	-	1861	1861	-	-	-	-	219	8	30	0	16	9	508	747	160	iron, screw.
2,601	28,897	Tintern	-	-	ditto	-	"	"	-	-	-	-	126	7	19	2	8	8	79	146	70	iron.
2,602	29,542	Ada	-	-	ditto	-	"	"	-	-	-	-	250	0	30	0	21	1	967	1,169	260	iron, screw.
2,603	29,543	Nora	-	-	ditto	-	"	"	-	-	-	-	177	6	26	3	14	2	334	432	100	iron, screw.
2,604	29,545	Era	-	-	ditto	-	"	"	-	-	-	-	201	5	24	0	15	0	437	560	90	iron, screw.
2,605	29,548	Delta	-	-	ditto	-	1862	"	-	-	-	-	201	2	24	1	16	5	454	594	90	iron, screw.
2,606	29,549	Bellona	-	-	ditto	-	"	"	-	-	-	-	300	3	34	2	24	1	1,590	1,879	300	iron, screw.
2,607	29,426	Erin	-	-	ditto	-	1861	"	-	-	-	-	119	2	15	0	7	1	63	82	25	iron, screw.
2,608	45,351	Cella	-	-	ditto	-	1862	"	-	-	-	-	297	4	34	4	24	0	1,685	1,992	300	iron, screw.
2,609	21,184	Lorton	-	-	ditto	-	1863	"	-	-	-	-	67	6	14	0	6	5	28	41	30	iron, screw.
2,610	45,356	Rosa	-	-	ditto	-	"	"	-	-	-	-	130	3	19	2	8	1	88	148	65	iron.
2,611	45,355	Camilla	-	-	ditto	-	"	"	-	-	-	-	235	3	29	6	17	0	644	789	140	iron, screw.
2,612	29,547	Uruguay	-	-	ditto	-	1861	"	-	-	-	-	251	5	32	0	21	1	1,103	1,301	260	iron, screw.
2,613	29,550	Parana	-	-	ditto	-	1862	"	-	-	-	-	251	4	32	2	21	9	1,097	1,320	180	iron, screw.
2,614	45,359	Paraguay	-	-	ditto	-	1864	"	-	-	-	-	251	2	32	0	21	6	1,210	1,444	180	iron, screw.
2,615	45,360	Atalanta	-	-	ditto	-	"	"	-	-	-	-	341	6	34	2	23	9	1,901	2,198	400	iron, screw.
2,616	47,541	Montezuma	-	-	ditto	-	1868	"	-	-	-	-	221	5	30	2	19	2	705	911	140	iron, screw.
2,617	49,731	Jowa	-	-	ditto	-	1864	"	-	-	-	-	315	0	34	0	24	0	1,781	2,136	400	iron, screw.
2,618	45,017	Leda	-	-	ditto	-	1862	"	-	-	-	-	191	3	28	9	17	3	571	715	90	iron, screw.
2,619	49,732	Cordova	-	-	ditto	-	1864	"	-	-	-	-	245	5	30	3	16	9	1,119	1,415	250	iron, screw.
2,620	49,733	Nereid	-	-	ditto	-	"	"	-	-	-	-	73	0	12	0	7	0	20	32	20	iron, screw.
2,621	49,735	Minna	-	-	ditto	-	1865	"	-	-	-	-	289	1	30	0	16	1	637	783	150	iron, screw.
2,622	49,734	Avoca	-	-	ditto	-	"	"	-	-	-	-	228	0	31	0	16	0	579	797	150	iron, screw.
2,623	49,736	Aura	-	-	ditto	-	"	"	-	-	-	-	201	0	26	0	15	0	517	692	100	iron, screw.
2,624	49,737	Ida	-	-	ditto	-	"	"	-	-	-	-	211	6	28	0	17	0	645	824	90	iron, screw.
2,625	8,070	Firefly	-	-	Wexford	-	1857	1846	H. W. Hartnell	-	-	-	167	9	25	0	11	5	208	330	160	iron.
2,626	20,250	Erin	-	-	ditto	-	1858	1858	Richard Devereux	-	-	-	81	5	16	1	8	9	17	68	40	
2,627	23,922	Troubadour	-	-	ditto	-	1860	1841	Wexford Steam Ship Company	-	-	-	208	5	32	8	13	8	387	616	180	iron.
2,628	44,288	Ruby	-	-	ditto	-	1863	1862	Wexford Harbour Commissioners	-	-	-	90	2	17	9	9	8	36	98	46	

[illegible]

Ino. J. Mayo,
Registrar General.

**General Register and Record Office of Shipping and Seamen, }
London, 26 June 1866.**

I N D E X.

VESSELS' NAMES.	Port of Registry.	No. of Reference.	VESSELS' NAMES.	Port of Registry.	No. of Reference.
A. - - - -	Glasgow - -	2,127	Alderman Ridley - -	Newcastle - -	1,521
Aberdeenshire - -	Hull - - -	989	Alemania - - - -	London - - -	594
Aberystwith - - -	Aberystwith -	709	Alert - - - - -	Hull - - - -	994
Aberystwith - - -	Gainsborough -	859	Aleppo - - - - -	Glasgow - - -	2,259
Abigail - - - - -	Liverpool - -	1,332	Alexander - - - -	Dundee - - -	2,062
Achilles - - - - -	Sunderland - -	1,946	Alexander - - - -	Glasgow - - -	2,234
Acquilla - - - - -	Glasgow - - -	2,181	Alexandra - - - -	Dublin - - -	2,547
Active - - - - -	Shields - - -	1,677	Alexandra - - - -	London - - -	444
Ada - - - - -	Waterford - -	2,602	Alexandra - - - -	- ditto - - -	466
Ada Wilson - - - -	Liverpool - -	1,336	Alexandra - - - -	- ditto - - -	471
Adalia - - - - -	London - - -	634	Alexandra - - - -	- ditto - - -	540
Adele - - - - -	Glasgow - - -	2,202	Alexandra - - - -	- ditto - - -	640
Adeline - - - - -	Dublin - - -	2,520	Alexandra - - - -	Londonderry -	2,572
Aden - - - - -	London - - -	184	Alford - - - - -	London - - -	638
Adjutant - - - - -	Fleetwood - -	845	Alice - - - - -	Grangemouth -	2,335
Admiral - - - - -	Middlesborough -	1,461	Alice - - - - -	Liverpool - -	1,396
Admiral - - - - -	Newcastle - -	1,475	Alice - - - - -	London - - -	403
Admiral - - - - -	- ditto - - -	1,554	Alice - - - - -	Preston - - -	1,635
Admiral Cator - - -	Hartlepool, West -	909	Alliance - - - - -	Leith - - - -	2,896
Admiral Kanaris - -	London - - -	400	Alliance - - - - -	London - - -	220
Admiral Moorsom - -	Chester - - -	818	Alliance - - - - -	Southampton -	1,824
Adria - - - - -	London - - -	536	Alma - - - - -	Bristol - - -	767
Adriatic - - - - -	- ditto - - -	353	Alma - - - - -	Greenock - - -	2,344
Adriatico - - - - -	Newcastle - -	1,645	Alma - - - - -	Leith - - - -	2,381
Adur - - - - -	Shields, South -	1,803	Alma - - - - -	Newcastle - -	1,489
Advance - - - - -	Glasgow - - -	2,139	Alma - - - - -	Rochester - -	1,642
Advance - - - - -	Stockton - - -	1,861	Alpha - - - - -	Glasgow - - -	2,178
Advance - - - - -	Sunderland - -	1,898	Alpheus - - - - -	Alloa - - - -	2,035
Advance - - - - -	- ditto - - -	1,944	Alster - - - - -	Hull - - - -	923
Adventurer - - - -	Liverpool - -	1,270	Amazon - - - - -	Liverpool - -	1,350
Aerial - - - - -	Plymouth - -	1,621	Amazon - - - - -	London - - -	394
Africa - - - - -	Glasgow - - -	2,084	Amazon - - - - -	Newcastle - -	1,537
Agia Sofia - - - - -	Liverpool - -	1,124	Amelia - - - - -	Shields - - -	1,704
Agnes Arkle - - - -	London - - -	654	America - - - - -	Glasgow - - -	2,086
Agnes E. Fry - - - -	- ditto - - -	545	America - - - - -	London - - -	593
Agnes Jack - - - -	Liverpool - -	1,413	American - - - - -	Liverpool - -	1,382
Ahuriri - - - - -	London - - -	510	American - - - - -	Southampton -	1,836
Aid - - - - -	- ditto - - -	161	Amphion - - - - -	London - - -	592
Aid - - - - -	Southampton -	1,834	Amy - - - - -	Liverpool - -	1,367
Airedale - - - - -	London - - -	214	Andalusia - - - -	Glasgow - - -	2,197
Ajax - - - - -	Bristol - - -	748	Andrew Woodhouse -	Yarmouth - -	2,012
Ajax - - - - -	Faversham - -	844	Anglia - - - - -	Dundee - - -	2,060
Ajax - - - - -	Liverpool - -	1,394	Anglia - - - - -	Liverpool - -	1,193
Ajax - - - - -	Sunderland - -	1,924	Anglia - - - - -	London - - -	312
Ajax - - - - -	Whitehaven - -	2,000	Anglian - - - - -	Southampton -	1,847
Alabama - - - - -	Liverpool - -	1,195	Amita - - - - -	London - - -	112
Alacrity - - - - -	London - - -	287	Ann - - - - -	Middlesborough -	1,433
Alacrity - - - - -	Shields - - -	1,692	Ann and Jane - - -	Newcastle - -	1,465
Alar - - - - -	London - - -	205	Ann and Jane - - -	Sunderland - -	1,907
Alarm - - - - -	Bristol - - -	751	Anna Liffey - - -	Dublin - - -	2,554
Alarm - - - - -	London - - -	279	Anne - - - - -	Sunderland - -	1,928
Albanian - - - - -	Liverpool - -	1,082	Annette - - - - -	London - - -	354
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Albany - - - - -	Shields, South -	1,806	Annie - - - - -	Liverpool - -	1,114
Albatross - - - - -	Cork - - - -	2,479	Annie - - - - -	London - - -	489
Albert - - - - -	- ditto - - -	2,470	Annie - - - - -	- ditto - - -	501
Albert - - - - -	Dublin - - -	2,505	Annie Vernon - - -	Liverpool - -	1,096
Albert - - - - -	Glasgow - - -	2,319	Annsbro' - - - -	Newry - - - -	2,574
Albert - - - - -	Grimsby - - -	886	Ant - - - - -	Gainsborough -	854
Albert - - - - -	Hull - - - -	970	Ant - - - - -	Liverpool - -	1,339
Albert - - - - -	London - - -	497	Antagonist - - - -	London - - -	508
Albert Edward - - -	- ditto - - -	392	Anthony Nichol - -	Newcastle - -	1,518
Albion - - - - -	Glasgow - - -	2,204	Antona - - - - -	Glasgow - - -	2,183
Albion - - - - -	- ditto - - -	2,276	Apello - - - - -	Bristol - - -	754
Albion - - - - -	- ditto - - -	2,301	Apollo - - - - -	Hull - - - -	1,003
Albion - - - - -	Hull - - - -	982	Apello - - - - -	Shields - - -	1,687
Albion - - - - -	Liverpool - -	1,107	Aquila - - - - -	Weymouth - -	1,988
Albion - - - - -	- ditto - - -	1,138	Arab - - - - -	Lowestoft - -	1,424
Albion - - - - -	- ditto - - -	1,240	Arabia - - - - -	Glasgow - - -	2,076
Albion - - - - -	London - - -	54	Arabia - - - - -	- ditto - - -	2,190
Albion - - - - -	Shields - - -	1,674	Arabian - - - - -	Carlisle - - -	807

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Arago - - - -	- ditto - - - -	1,414	Baltic - - - -	Leith - - - -	2,882
Araxes - - - -	- ditto - - - -	1,091	Baltic - - - -	London - - - -	192
Arbutus - - - -	Glasgow - - - -	2,313	Barnockburn - - -	Weymouth - - -	1,991
Arcadia - - - -	Liverpool - - -	1,085	Banshee - - - -	Glasgow - - - -	2,233
Archimedes - - -	Newcastle - - -	1,580	Baroda - - - -	London - - - -	482
Argo - - - -	Hull - - - -	945	Baron Hambro' - - -	- ditto - - - -	326
Argus - - - -	London - - - -	200	Barwon - - - -	Greenock - - - -	2,353
Argus - - - -	- ditto - - - -	366	Basingstoke - - - -	Shields, South - -	1,810
Argyll - - - -	Glasgow - - - -	2,216	Bassem - - - -	Glasgow - - - -	2,907
Argyll - - - -	Southampton - -	1,922	Batalion - - - -	Leith - - - -	2,411
Ariel - - - -	Carlisle - - - -	806	Beacon - - - -	London - - - -	589
Ariel - - - -	Hull - - - -	1,004	Beaufort - - - -	Sunderland - - -	1,878
Ariel - - - -	Liverpool - - -	1,376	Beauty - - - -	London - - - -	685
Ariel - - - -	London - - - -	216	Beaver - - - -	- ditto - - - -	1
Armstrong - - - -	Glasgow - - - -	2,235	Beaver - - - -	Port Glasgow - - -	2,440
Arno - - - -	London - - - -	398	Bebside - - - -	Newcastle - - - -	1,366
Arno - - - -	- ditto - - - -	668	Bee - - - -	Gainsborough - - -	856
Arran Castle - - -	Cork - - - -	2,483	Bee - - - -	Gloucester - - -	863
Arran Castle - - -	Glasgow - - - -	2,240	Bee - - - -	Liverpool - - - -	1,338
Arrow - - - -	London - - - -	365	Bee - - - -	Sunderland - - -	1,864
Arrow - - - -	Middlesborough - -	1,459	Behur - - - -	London - - - -	250
Artemis - - - -	Hull - - - -	1,002	Behera - - - -	- ditto - - - -	636
Artizan - - - -	Dublin - - - -	2,526	Belgian - - - -	Liverpool - - - -	1,261
Artizan - - - -	London - - - -	297	Belgium - - - -	London - - - -	108
Ashford - - - -	- ditto - - - -	666	Bellona - - - -	Waterford - - - -	2,606
Asia - - - -	Glasgow - - - -	2,083	Belmont - - - -	Middlesborough - -	1,438
Asia - - - -	- ditto - - - -	2,272	Belmont - - - -	Sunderland - - -	1,922
Asia - - - -	London - - - -	445	Belmont - - - -	- ditto - - - -	1,959
Assam Nautilus - -	- ditto - - - -	283	Benares - - - -	London - - - -	224
Atalanta - - - -	Gainsborough - - -	853	Benbow - - - -	Liverpool - - - -	1,374
Atalanta - - - -	Ipswich - - - -	1,011	Bengal - - - -	London - - - -	98
Atalanta - - - -	London - - - -	506	Benwell - - - -	Leith - - - -	2,409
Atalanta - - - -	Southampton - - -	1,820	Berlin - - - -	- ditto - - - -	2,402
Atalanta - - - -	Waterford - - - -	2,615	Berlin - - - -	Liverpool - - - -	1,162
Athanasian - - - -	Glasgow - - - -	2,145	Bernuda - - - -	- ditto - - - -	1,176
Athenian - - - -	London - - - -	228	Berrington - - - -	Sunderland - - -	1,958
Athlete - - - -	Bristol - - - -	747	Bertha - - - -	Glasgow - - - -	2,255
Athlene - - - -	Dublin - - - -	2,552	Berwick - - - -	London - - - -	168
Atlantic - - - -	Liverpool - - -	1,150	Bessie - - - -	Hayle - - - -	914
Atlas - - - -	Bristol - - - -	737	Best Bower - - - -	Leith - - - -	2,377
Atlas - - - -	Dundee - - - -	2,064	Beste - - - -	Shields - - - -	1,694
Atlas - - - -	Glasgow - - - -	2,135	Beta - - - -	Waterford - - - -	2,600
Atlas - - - -	Llanelly - - - -	1,416	Bhima - - - -	Liverpool - - - -	1,308
Atlas - - - -	Sunderland - - -	1,902	Bidwick - - - -	Sunderland - - -	1,939
Atlas - - - -	- ditto - - - -	1,923	Bintang - - - -	Liverpool - - - -	1,325
Atrato - - - -	London - - - -	124	Bird of the Harbour -	- ditto - - - -	1,143
Auckland - - - -	- ditto - - - -	419	Birkenhead - - - -	- ditto - - - -	1,042
Augusta - - - -	Bristol - - - -	729	Bishop - - - -	London - - - -	127
Augusta - - - -	Swansea - - - -	1,970	Bittern - - - -	Cork - - - -	2,478
Augusta Louise - -	Glasgow - - - -	2,120	Black Boy - - - -	London - - - -	208
Auld Reekie - - -	Leith - - - -	2,386	Black Boy - - - -	Sunderland - - -	1,938
Aunt Alice - - - -	Goole - - - -	873	Black Diamond - - -	London - - - -	166
Aura - - - -	Waterford - - - -	2,523	Black Diamond - - -	Troon - - - -	2,444
Aurora - - - -	London - - - -	542	Black Duck - - - -	London - - - -	490
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Australian - - - -	- ditto - - - -	2,222	Black Eagle - - - -	Cork - - - -	2,466
Ava - - - -	- ditto - - - -	2,167	Black Eagle - - - -	Hull - - - -	920
Avalon - - - -	London - - - -	671	Black Prince - - - -	London - - - -	376
Avenger - - - -	Shields - - - -	1,665	Black Swan - - - -	Newcastle - - - -	1,560
Avoca - - - -	Waterford - - - -	2,622	Blanche - - - -	Glasgow - - - -	2,206
Avon - - - -	Bristol - - - -	733	Blanche - - - -	Liverpool - - - -	1,040
Avon - - - -	Grangemouth - - -	2,339	Blarney - - - -	- ditto - - - -	1,071
Ayrshire - - - -	Sunderland - - -	1,937	Blaydon - - - -	Newcastle - - - -	1,480
Ayrshire Lass - - -	Ayr - - - -	2,041	Blazer - - - -	Liverpool - - - -	1,103
Azalea - - - -	London - - - -	380	Blessing - - - -	Newcastle - - - -	1,482
Aziz - - - -	- ditto - - - -	464	Blonde - - - -	London - - - -	472
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Bagdad Packet - - -	Liverpool - - - -	1,251	Blue Bell - - - -	London - - - -	188
Balbee - - - -	Glasgow - - - -	2,077	Blue Bell - - - -	Sunderland - - -	1,980
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			Blue Jacket - - - -	Shields - - - -	1,717

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Bob Chambers - - -	Cardiff - - -	798	Busy Bee - - - -	Newcastle - - -	1,581
Bob Chambers - - -	- ditto - - -	803	Bute - - - -	Glasgow - - -	2,298
Bob Chambers - - -	Montrose - - -	2,435	Bwlfa - - - -	London - - -	703
Bob Chambers - - -	Shields - - -	1,741	C. S. Butler - - - -	London - - -	701
Bobolina - - - -	London - - -	240	Cadiz - - - -	- ditto - - -	100
Bogota - - - -	Liverpool - - -	1,141	Cadiz - - - -	- ditto - - -	278
Bolderaa - - - -	Hull - - -	933	Cairo - - - -	Liverpool - - -	1,139
Bolivar - - - -	Liverpool - - -	1,351	Calabar - - - -	London - - -	518
Bolivia - - - -	- ditto - - -	1,047	Calcutta - - - -	- ditto - - -	328
Bolivian - - - -	London - - -	588	Caledonia - - - -	Glasgow - - -	2,099
Bolton - - - -	- ditto - - -	90	Caledonia - - - -	- ditto - - -	2,198
Bombay - - - -	- ditto - - -	87	Caledonia - - - -	London - - -	125
Bombay - - - -	- ditto - - -	681	Caledonia - - - -	- ditto - - -	143
Bon Accord - - - -	Aberdeen - - -	2,022	Caledonia - - - -	Newcastle - - -	1,563
Bon Accord - - - -	Newcastle - - -	1,577	Californian - - - -	Liverpool - - -	1,392
Bonnie Dundee - - -	- ditto - - -	1,495	Callao - - - -	- ditto - - -	1,135
Bordeaux - - - -	Newhaven - - -	1,604	Calpe - - - -	- ditto - - -	1,182
Boreas - - - -	London - - -	290	Calypso - - - -	Bristol - - -	765
Bosphorus - - - -	Liverpool - - -	1,318	Calypso - - - -	Hull - - -	1,006
Bosphorus - - - -	London - - -	60	Cambria - - - -	Chester - - -	817
Boston - - - -	Newcastle - - -	1,505	Cambrian - - - -	Southampton - - -	1,830
Brackley - - - -	Liverpool - - -	1,147	Cambridgeshire - - - -	Wisbeach - - -	2,005
Braganza - - - -	- ditto - - -	1,095	Camel - - - -	Liverpool - - -	1,405
Brancepeth - - - -	Newcastle - - -	1,570	Camellia - - - -	London - - -	230
Brazil - - - -	Glasgow - - -	2,317	Camilla - - - -	Waterford - - -	2,611
Brazilian - - - -	London - - -	587	Campanera - - - -	Cowes - - -	825
Breeze - - - -	- ditto - - -	447	Camperdown - - - -	Dundee - - -	2,055
Brenda - - - -	Waterford - - -	2,592	Canada - - - -	Glasgow - - -	2,089
Brian Boromhe - - -	Drogheda - - -	2,499	Candia - - - -	London - - -	206
Bride - - - -	Hayle - - -	913	Carbon - - - -	Newcastle - - -	1,486
Bridegroom - - - -	London - - -	8	Cardiff Castle - - - -	Cardiff - - -	772
Bridgwater - - - -	Liverpool - - -	1,116	Cardiff Castle - - - -	Glasgow - - -	2,125
Bridgwater - - - -	- ditto - - -	1,389	Cardinal Wolsey - - - -	Middlesborough - - -	1,452
Brigadier - - - -	Newcastle - - -	1,541	Carham - - - -	Carlisle - - -	809
Brighton - - - -	Weymouth - - -	1,989	Carlo - - - -	Liverpool - - -	1,314
Brilliant - - - -	Shields - - -	1,673	Carnatic - - - -	London - - -	417
Brilliant - - - -	Southampton - - -	1,845	Carolina - - - -	Liverpool - - -	1,406
Britannia - - - -	Aberdeen - - -	2,019	Caroline - - - -	Glasgow - - -	2,242
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Britannia - - - -	Leith - - -	2,373	Carradale - - - -	Glasgow - - -	2,241
Britannia - - - -	Liverpool - - -	1,044	Carrier - - - -	Leith - - -	2,380
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Britannia - - - -	Shields - - -	1,654	Carrs - - - -	Sunderland - - -	1,910
Britannia - - - -	- ditto - - -	1,732	Carthage - - - -	Glasgow - - -	2,107
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British Hero - - - -	Shields - - -	1,728	Castor - - - -	- ditto - - -	1,372
British Queen - - -	Glasgow - - -	2,079	Catherine - - - -	Middlesborough - - -	1,439
British Queen - - -	Hartlepool, West - - -	906	Cato - - - -	Liverpool - - -	1,058
British Queen - - -	Newcastle - - -	1,497	Cecile - - - -	- ditto - - -	1,222
British Queen - - -	Stockton - - -	1,855	Cella - - - -	Waterford - - -	2,608
British Warrior - - -	Shields - - -	1,681	Celt - - - -	Campbeltown - - -	2,045
Briton - - - -	Bristol - - -	759	Ceres - - - -	London - - -	459
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Briton - - - -	Newcastle - - -	1,526	Ceres - - - -	Weymouth - - -	1,990
Briton - - - -	Southampton - - -	1,835	Ceylon - - - -	London - - -	244
Brittany - - - -	- ditto - - -	1,848	Challenge - - - -	Dublin - - -	2,540
Brother Jonathan - - -	Liverpool - - -	1,129	Challenge - - - -	London - - -	196
Brothers - - - -	Port Glasgow - - -	2,443	Champion - - - -	Liverpool - - -	1,279
Brothers - - - -	Shields - - -	1,679	Champion - - - -	London - - -	271
Bruiser - - - -	London - - -	201	Champion - - - -	- ditto - - -	688
Brunel - - - -	Cork - - -	2,489	Champion - - - -	Middlesborough - - -	1,453
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Charm -	London -	175	Clyde -	Sunderland -	1,877
Cheduba -	Glasgow -	2,182	Clydesdale -	Glasgow -	2,162
Chesapeake -	- ditto -	2,148	Cochrane -	Sunderland -	1,905
Chesapeake -	Newcastle -	1,528	Cockerell -	London -	255
Cheshire -	Liverpool -	1,253	Cognac -	Liverpool -	1,164
Chester -	London -	150	Colchester -	- ditto -	1,045
Chevy Chase -	Newcastle -	1,524	Colleen Bawn -	Drogheda -	2,502
Chieftain -	Liverpool -	1,113	Colletis -	Goole -	876
Chieftain -	Shields -	1,705	Collier -	Glasgow -	2,154
Chieftain -	Swansea -	1,968	Collina -	- ditto -	2,172
Childe Harold -	London -	374	Collingwood -	Newcastle -	1,529
Childe Harold -	- ditto -	487	Colocotronis -	London -	412
Chile -	Liverpool -	1,233	Cologne -	- ditto -	248
Chilian -	- ditto -	1,301	Colonia -	Liverpool -	1,188
China -	Glasgow -	2,156	Colonist -	- ditto -	1,154
China -	London -	280	Columbia -	London -	311
Chip Chase -	Shields -	1,755	Columbian -	- ditto -	282
Chloe -	Cork -	2,497	Columbine -	Gainsborough -	851
Christina -	London -	247	Columbus -	Liverpool -	1,274
Christina Sinclair -	Cardiff -	773	Columbus -	- ditto -	1,385
Christopher Thomas -	Bristol -	761	Comet -	- ditto -	1,100
Chrysolite -	Liverpool -	1,381	Commerce -	Sligo -	2,578
Cintra -	- ditto -	1,073	Commissioner -	Cork -	2,490
Circassian -	London -	325	Commissioner -	Newcastle -	1,550
Cisne -	Glasgow -	2,308	Commodore -	Greenock -	2,359
Citadel -	Leith -	2,433	Commodore -	London -	80
Citizen -	Cork -	2,487	Commodore -	Middlesborough -	1,437
Citizen -	Waterford -	2,583	Commodore -	Weymouth -	1,994
Citizen (A.) -	London -	42	Como -	Sunderland -	1,961
Citizen (B.) -	- ditto -	45	Comorin -	Glasgow -	2,192
Citizen (C.) -	- ditto -	46	Concordia -	London -	75
Citizen (D.) -	- ditto -	50	Confianza -	- ditto -	689
Citizen (E.) -	- ditto -	43	Confidence -	Middlesborough -	1,446
Citizen (F.) -	- ditto -	49	Confidence -	- ditto -	1,454
Citizen (G.) -	- ditto -	40	Congress -	London -	382
Citizen (H.) -	- ditto -	47	Connaught -	Dublin -	2,538
Citizen (I.) -	- ditto -	44	Connector -	London -	241
Citizen (K.) -	- ditto -	41	Conqueror -	Glasgow -	2,312
Citizen (L.) -	- ditto -	48	Conqueror -	Liverpool -	1,074
Citizen (M.) -	- ditto -	181	Conqueror -	- ditto -	1,104
Citizen (N.) -	- ditto -	172	Conqueror -	London -	504
Citizen (O.) -	- ditto -	173	Conqueror -	- ditto -	597
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City of Boston -	- ditto -	1,324	Conqueror -	Glasgow -	2,252
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City of Durham -	- ditto -	1,400	Conservator -	- ditto -	614
City of Hamburg -	London -	2	Constance -	Greenock -	2,356
City of Limerick -	Liverpool -	1,220	Constitution -	Liverpool -	1,062
City of London -	Aberdeen -	2,016	Contest -	Goole -	868
City of London -	Liverpool -	1,228	Contest -	Shields -	1,772
City of London -	London -	323	Contractor -	London -	145
City of London -	- ditto -	427	Contractor -	Plymouth -	1,020
City of Manchester -	Liverpool -	1,055	Contractor -	Weymouth -	1,993
City of New York -	- ditto -	1,348	Conway -	London -	35
City of Norwich -	London -	331	Coral Queen -	Hartlepool, West -	910
City of Paris -	- ditto -	573	Coreyra -	London -	391
City of Rochester -	Rochester -	1,641	Cordova -	Waterford -	2,619
City of Washington -	Liverpool -	1,086	Corea -	Glasgow -	2,271
Clan Alpine -	London -	406	Coringa -	- ditto -	2,141
Clansman -	Glasgow -	2,095	Corinthian -	Liverpool -	1,077
Clara -	- ditto -	2,232	Cormorant -	Cork -	2,485
Clara -	Gloucester -	860	Cornelia -	London -	105
Claud Hamilton -	London -	377	Corsair -	Bristol -	760
Cleator -	Liverpool -	1,094	Corsair -	Leith -	2,390
Cleopatra -	Sunderland -	1,954	Corsica -	Glasgow -	2,175
Cleveland -	Liverpool -	1,633	Cosmopolitan -	London -	275
Clifton -	Bristol -	731	Cossack -	Hull -	942
Clio -	Hull -	978	Coumoundouros -	London -	680
Clotilda -	London -	451	Countess of Caledon -	Belfast -	2,449
Clutha -	Glasgow -	2,236	Countess of Durham -	Sunderland -	1,892
Clutha -	Grangemouth -	2,384	Countess of Eglinton -	Ardrossan -	2,089

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Countess of Lonsdale	London	90	Dijleh	London	537
Courier	- ditto	574	Disowned	- ditto	57
Courier	Southampton	1,816	Dispatch	Southampton	1,818
Cowen	Newcastle	1,549	Dodo	Cork	2,477
Crimean	Liverpool	1,119	Dolphin	Bristol	752
Cristobal Colon	- ditto	1,344	Dolphin	Liverpool	1,312
Cromwell	London	630	Dolphin	London	170
Cronstadt	Hull	968	Dolphin	- ditto	367
Cruizer	Liverpool	1,186	Don	- ditto	123
Cruizer	Shields, Senth	1,791	Don	Newcastle	1,474
Cruader	Liverpool	1,364	Don	Rochester	1,643
Cuba	Glasgow	2,261	Don Pedro	Glasgow	2,195
Cuban	Liverpool	1,367	Donna	Swansea	1,966
Cutrassier	Hull	974	Doris	London	262
Cumbria	Carlisle	805	Dougal	- ditto	53
Cumbrian	Boston	715	Douglas	Sunderland	1,919
Cupid	Grangemouth	2,226	Douro	Liverpool	1,063
Curlew	Liverpool	1,387	Douro	- ditto	1,320
Cyclone	Glasgow	2,325	Douro	London	499
Cygnat	- ditto	2,072	Douro	- ditto	642
Cygnat	Newcastle	1,566	Dragon	Liverpool	1,187
Cygnus	Weymouth	1,987	Dragon	London	139
Cymro	Chester	811	Dragon Fly	- ditto	106
Czar	Hull	1,001	Dragon Fly	Swansea	1,966
Czar	London	396	Dragoon	Newcastle	1,571
			Dream	Liverpool	1,312
Dagmar	Liverpool	1,241	Breaden	Leith	2,424
Dahlia	London	318	Bruid	Campbeltown	2,046
Daisy	Cork	2,480	Dryad	London	83
Daisy	Sunderland	1,909	Dublin	Dublin	2,551
Dalmatian	Liverpool	1,186	Dublin	Waterford	2,585
Damascus	Glasgow	2,157	Duchess	Lancaster	1,025
Damietta	London	626	Duchess	- ditto	1,030
Damoodah	Glasgow	2,285	Duchess of Argyll	Dublin	2,527
Dandy	Falmouth	669	Duchess of Kent	- ditto	2,511
Dandy	Shields, South	1,706	Dudley	Newcastle	1,505
Danish Queen	Hartlepool, West	911	Duke of Buccleuch	Penzance	1,609
Dantzic	Leith	2,413	Duke of Cambridge	Dublin	2,503
Danube	Liverpool	1,108	Duke of Cornwall	- ditto	2,518
Darien	- ditto	1,249	Duke of Sussex	Liverpool	1,049
Dart	Bristol	726	Dumbarton	London	509
Dart	Liverpool	1,326	Dumfries	Southampton	1,344
Dart	Newcastle	1,547	Dunoon	Waterford	2,584
Dart	- ditto	1,523	Dunglass	Glasgow	2,146
Dartmouth	Dartmouth	827	Durham	Shields	1,752
De Brus	Dublin	2,529	Durina	Leith	2,393
Deerhound	Liverpool	1,165	Durina	London	367
Defence	Shields, South	1,789			
Defiance	Bridgwater	718	Eagle	Dundee	2,951
Defiance	Greenock	2,861	Eagle	Glasgow	2,223
Defiance	London	185	Eagle	Leith	2,410
Delaware	Liverpool	1,898	Eagle	Liverpool	1,261
Delhi	London	483	Eagle	London	180
Delta	Glasgow	2,090	Eagle	- ditto	350
Delta	Liverpool	1,140	Eagle	- ditto	684
Delta	London	277	Eagle	Swansea	1,969
Delta	Waterford	2,605	Earl de Grey	Mull	980
Demetrius	London	197	Earl Percy	Newcastle	1,585
Denbigh	Liverpool	1,159	Earl Percy	Shields	1,688
Derwent	Aberdeen	2,020	Earl of Aberdeen	London	420
Derwent	London	68	Earl of Arran	Ardrossan	2,037
Derwent	Workington	2,006	Earl of Auckland	Waterford	2,596
Despatch	Hull	998	Earl of Carlisle	Dublin	2,549
Despatch	Leith	2,405	Earl of Durham	Sunderland	1,915
Despatch	Liverpool	1,111	Earl of Elgin	- ditto	1,917
Despatch	London	479	Earl of Ellesmere	Liverpool	1,127
Deva	Goole	874	Earl of Erne	Dundalk	2,559
Developement	Liverpool	1,328	Earl of Malmesbury	Plymouth	1,616
Diamond	Dublin	2,508	Earl of Sunderland	Sunderland	1,866
Diamond	Sunderland	1,894	East Anglian	Liverpool	1,293
Diana	Hull	929	Eastham Fairy	- ditto	1,173
Diana	Waterford	2,532	Eblana	Dublin	2,510
Dido	Hull	926	Echo	Shields	1,708

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Eclair	Dartmouth	833	Eptamisos	- ditto	678
Eclipse	Liverpool	1,038	Era	Waterford	2,604
Economy	Clay	820	Erik	London	622
Economy	Shields	1,868	Erim	Belfast	2,459
Edina	Leith	2,422	Erin	Liverpool	1,280
Edinburgh	Liverpool	1,144	Erin	Rye	1,646
Edinburgh Castle	Glasgow	2,133	Erim	Waterford	2,607
Edith	- ditto	2,258	Erin	Wexford	2,626
Edith	London	332	Erin-go-Bragh	Dublin	2,515
Edith	- ditto	498	Erl King	London	687
Edith Owen	Sunderland	1,942	Ernst Merck	- ditto	645
Edmund Ironsides	Gloucester	862	Esk	- ditto	314
Edward Hawkins	Newcastle	1,501	Esk	Whitby	1,996
Effort	Bristol	768	Esmeralda	Liverpool	1,211
Effort	Shields	1,760	Esperanza	London	681
Eglinton	Galway	2,562	Esigador	Liverpool	1,163
Egmont	London	541	Essex	London	52
Egyptian	Liverpool	1,180	Essex	- ditto	613
Eider	London	254	Estella	Grangemouth	2,338
Eider	- ditto	601	Estella	Liverpool	1,190
Elaine	Sunderland	1,940	Ester	London	295
Ellas	Newcastle	1,525	Esten Nab	Middlesborough	1,455
Electric	Belfast	2,458	Ethiope	London	193
Elfin	London	101	Etna	Liverpool	1,179
Elfin	- ditto	480	Eudid	London	219
Elgin	- ditto	395	Eugenie	Grimsby	885
Eliza	Newcastle	1,566	Euphrates	Glasgow	2,189
Elizabeth	Aberystwith	711	Europa	London	527
Elizabeth	Liverpool	1,041	Europa	Glasgow	2,102
Ells Constance	London	228	European	Hull	1,009
Ellen Constance	Sunderland	1,951	European	Liverpool	1,402
Ellen Sinclair	London	428	Euxine	London	69
Ellora	- ditto	256	Evelyn Mary	- ditto	532
Elsie	Greenock	2,368	Evelyn	Glasgow	2,244
Elswick	Shields	1,743	Evelyn	Limerick	2,567
Ely	Bristol	730	Eversfield	London	91
Ely	Cardiff	794	Excelsior	Glasgow	2,171
Emerald	Dublin	2,506	Excelsior	Hull	950
Emerald	Southampton	1,827	Excelsior	Shields	1,740
Emerald Isle	Dundalk	2,561	Experiment	Liverpool	1,256
Emerald Isle	Hull	940	Experiment	London	398
Emen	London	264	Export	Shields	1,685
Emily	Glasgow	2,253	Express	Aberystwith	706
Emily	- ditto	2,254	Express	Glasgow	2,109
Emily	Goole	872	Express	- ditto	2,152
Emma	Bristol	764	Express	Grangemouth	2,337
Emma	Glasgow	2,214	Express	Leith	2,384
Emmanuel	London	31	Express	London	194
Emperor	Hull	917	Express	Newcastle	1,519
Emperor	Liverpool	1,153	Fairfax	London	648
Emperor	- ditto	1,225	Fairwater	Newcastle	1,598
Emperor	Middlesborough	1,460	Fairy	Cork	2,471
Emperor	Plymouth	1,613	Fairy	Dublin	2,509
Empress	Goole	867	Fairy	Glasgow	2,196
Empress	Shields	1,765	Fairy	Greenock	2,364
Ems	Hull	973	Fairy	Hull	921
Endeavour	Grimsby	881	Fairy	London	284
Endeavour	London	607	Fairy	Plymouth	1,614
Energy	- ditto	202	Fairy Queen	Bristol	724
Engineer	Dover	835	Fairy Queen	Liverpool	1,412
Engineer	Shields	1,722	Fairy Queen	London	698
Engineer	Sunderland	1,872	Falcon	Cork	2,475
England	London	345	Falcon	Glasgow	2,240
Enniskillen	Londonderry	2,570	Falcon	Hull	922
Enterprise	Bristol	746	Falcon	London	347
Enterprise	Dundalk	2,560	Fannie	Glasgow	2,322
Enterprise	Kirkaldy	2,870	Fanny	Liverpool	1,121
Enterprise	Liverpool	1,084	Fanny	London	55
Enterprise	London	59	Fanny Lambert	- ditto	463
Enterprise	- ditto	280	Far East	- ditto	488
Enterprise	- ditto	601	Fatfield	Sunderland	1,956
Enterprise	Shields	1,686	Faugh-a-Ballagh	Drogheda	2,496
Eothen	London	500			

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Favourite - - -	- ditto - - -	1,762	Gazelle - - -	Rochester - - -	1,645
Fear Not - - -	Cardiff - - -	796	Gem - - -	Bristol - - -	735
Fearless - - -	Bristol - - -	745	Gem - - -	- ditto - - -	766
Fearless - - -	Middlesborough - - -	1,451	Gem - - -	Glasgow - - -	2,092
Felling - - -	Newcastle - - -	1,494	Gem - - -	Greenock - - -	2,349
Fideliter - - -	London - - -	446	Gem - - -	Leith - - -	2,421
Fifeshire - - -	Dundee - - -	2,053	Gem - - -	Southampton - - -	1,821
Fingal - - -	Leith - - -	2,417	Gem - - -	Wells - - -	1,984
Firebrand - - -	Middlesborough - - -	1,436	Gemariah - - -	Newcastle - - -	1,542
Firefly - - -	Cowes - - -	823	General Havelock - - -	Dublin - - -	2,556
Firefly - - -	Glasgow - - -	2,106	General Havelock - - -	Sunderland - - -	1,913
Firefly - - -	Liverpool - - -	1,131	General Lee - - -	Dublin - - -	2,555
Firefly - - -	London - - -	141	General Pellissier - - -	Shields - - -	1,683
Firefly - - -	Wexford - - -	2,625	General Williams - - -	Glasgow - - -	2,110
Fire King - - -	Liverpool - - -	1,098	Genova - - -	- ditto - - -	2,177
Fire Queen - - -	Hartlepool, West - - -	905	Genova - - -	Liverpool - - -	1,132
Fire Queen - - -	London - - -	544	Gently - - -	Sunderland - - -	1,891
Fletcher's Despatch - - -	Hull - - -	954	George Elliott - - -	London - - -	449
Fleur-de-Marie - - -	Swansea - - -	1,975	George P. Bidder - - -	Cork - - -	2,492
Flora - - -	London - - -	404	George Peabody - - -	London - - -	373
Flora - - -	Hull - - -	963	George Pyman - - -	Hartlepool, West - - -	908
Florence - - -	Glasgow - - -	2,257	George Roberts - - -	London - - -	191
Florence - - -	Leith - - -	2,432	George and Jane - - -	Hull - - -	960
Florence Nightingale - - -	Hull - - -	957	Georgia - - -	Liverpool - - -	1,271
Florida - - -	Liverpool - - -	1,194	Georgia Belle - - -	- ditto - - -	1,316
Flying Childers - - -	Glasgow - - -	2,247	Georgina M'Caw - - -	- ditto - - -	1,260
Flying Childers - - -	Liverpool - - -	1,191	Gerard - - -	- ditto - - -	1,205
Flying Childers - - -	- ditto - - -	1,264	Germania - - -	London - - -	186
Flying Dutchman - - -	Glasgow - - -	2,144	Gibraltar - - -	- ditto - - -	146
Flying Fish - - -	- ditto - - -	2,218	Gipsy Queen - - -	Liverpool - - -	1,411
Flying Foam - - -	- ditto - - -	2,284	Gipsy - - -	- ditto - - -	1,112
Flying Meteor - - -	- ditto - - -	2,246	Gipsy - - -	Plymouth - - -	1,612
Flying Mist - - -	- ditto - - -	2,231	Gipsy - - -	Waterford - - -	2,597
Flying Spray - - -	- ditto - - -	2,211	Gipsy King - - -	Sunderland - - -	1,895
Foam - - -	London - - -	457	Gipsy Queen - - -	Hartlepool, West - - -	898
Fokien - - -	- ditto - - -	411	Gipsy Queen - - -	Shields - - -	1,725
Forager - - -	Bristol - - -	755	Giraffe - - -	London - - -	4
Forest Queen - - -	Liverpool - - -	1,244	Gitana - - -	Hartlepool, West - - -	897
Forfarshire - - -	Dundee - - -	2,058	Gladiator - - -	Liverpool - - -	1,294
Forget-Me-Not - - -	Stockton - - -	1,863	Gladstone - - -	Middlesborough - - -	1,450
Formosa - - -	London - - -	88	Glasgow - - -	Liverpool - - -	1,177
Forrester - - -	Newcastle - - -	1,511	Glasgow - - -	Glasgow - - -	2,112
Forth - - -	Grangemouth - - -	2,333	Gleaner - - -	Cardiff - - -	783
Forth - - -	Kirkaldy - - -	2,367	Gleaner - - -	Middlesborough - - -	1,457
Forth - - -	Leith - - -	2,387	Glengyle - - -	London - - -	528
Forth - - -	London - - -	455	Gloriana - - -	Port Glasgow - - -	2,442
Fortuna - - -	- ditto - - -	543	Gnome - - -	Leith - - -	2,408
Foyle - - -	Dublin - - -	2,519	Gnu - - -	Glasgow - - -	2,295
Frankfort - - -	Liverpool - - -	1,056	Goconda - - -	London - - -	470
Frederica - - -	Southampton - - -	1,839	Golden Fleece - - -	London - - -	121
Friend of all Nations - - -	Sunderland - - -	1,935	Golden Horn - - -	Hartlepool - - -	891
Friend to all Nations - - -	London - - -	77	Golden Pledge - - -	Liverpool - - -	1,272
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Fruiterer - - -	Hull - - -	988	Goliah - - -	Shields - - -	1,698
Fury - - -	Gainsborough - - -	857	Goolwa - - -	London - - -	486
Fury - - -	Liverpool - - -	1,101	Gosforth - - -	Shields - - -	1,695
Fury - - -	Shields - - -	1,897	Governor Higginson - - -	Glasgow - - -	2,121
Fusi Yama - - -	London - - -	401	Grace Darling - - -	Shields - - -	1,658
Fusilier - - -	Newcastle - - -	1,572	Granada - - -	London - - -	213
Galileo - - -	Liverpool - - -	1,269	Grand Junction - - -	Belfast - - -	2,448
Gallia - - -	Dundee - - -	2,066	Grange - - -	Grangemouth - - -	2,327
Gambia - - -	Aberdeen - - -	2,018	Gratitude - - -	Cardiff - - -	788
Gambia - - -	Liverpool - - -	1,341	Great Britain - - -	Liverpool - - -	1,075
Ganges - - -	London - - -	74	Great Conquest - - -	- ditto - - -	1,093
Ganges - - -	Shields - - -	1,749	Great Conquest - - -	- ditto - - -	1,155
Gareloch - - -	Cowes - - -	824	Great Eastern - - -	London - - -	511
Garibaldi - - -	Leith - - -	2,404	Great Emperor - - -	Liverpool - - -	1,277
Garibaldi - - -	London - - -	606	Great Extended - - -	Shields - - -	1,733
Garibaldi - - -	Newcastle - - -	1,509	Great Northern - - -	Liverpool - - -	1,384
Garibaldi - - -	- ditto - - -	1,580	Great Victoria - - -	- ditto - - -	1,229
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Grey Mare Meg - - -	London - - -	14	Hero - - -	Glasgow - - -	2,185
Griffin - - -	Glasgow - - -	2,291	Hero - - -	Liverpool - - -	1,196
Griffin - - -	Southampton - - -	1,849	Hero - - -	London - - -	333
Grimsby - - -	Grimsby - - -	888	Hero - - -	Sunderland - - -	1,952
Guyaquil - - -	Liverpool - - -	1,149	Heron - - -	Ipswich - - -	1,019
Gunga - - -	- ditto - - -	1,322	Heron - - -	London - - -	496
Guy Fawkes - - -	Glasgow - - -	2,283	Hetton - - -	Sunderland - - -	1,904
			Hibernia - - -	Chester - - -	813
Halcyon - - -	Cork - - -	2,481	Hibernia - - -	Dundee - - -	2,065
Halley - - -	Liverpool - - -	1,403	Hibernia - - -	Glasgow - - -	2,292
Halls - - -	London - - -	118	Hibernia - - -	London - - -	310
Hamburg - - -	- ditto - - -	408	Highland Maid - - -	- ditto - - -	38
Hanover - - -	- ditto - - -	102	Hilda - - -	Liverpool - - -	1,407
Harkaway - - -	Shields, South - - -	1,802	Hilda - - -	London - - -	646
Harlequin - - -	Gainsborough - - -	852	Hilda - - -	Whitby - - -	1,995
Harmony - - -	Grangemouth - - -	2,329	Hindustan - - -	London - - -	13
Harmony - - -	Shields - - -	1,672	Holland - - -	- ditto - - -	108
Harriet - - -	Middlesborough - - -	1,432	Hollander - - -	Hull - - -	995
Harry Clasper - - -	Newcastle - - -	1,515	Holyrood - - -	Limerick - - -	2,564
Harry Vane - - -	Sunderland - - -	1,890	Home - - -	Shields - - -	1,719
Hartlepool - - -	London - - -	696	Honfleur - - -	London - - -	700
Harvest Home - - -	Alloa - - -	2,033	Honour - - -	Newcastle - - -	1,499
Harvest Home - - -	Sunderland - - -	1,897	Hope - - -	Shields - - -	1,718
Harwich - - -	London - - -	548	Hornet - - -	Liverpool - - -	1,359
Hastings - - -	- ditto - - -	609	Hull - - -	Hull - - -	998
Haswell - - -	Exeter - - -	837	Humber - - -	- ditto - - -	946
Haswell - - -	London - - -	338	Hutton Chaytor - - -	London - - -	167
Haswell - - -	Sunderland - - -	1,869	Hussar - - -	Newcastle - - -	1,597
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Havre - - -	Swansea - - -	1,978	"I" - - -	Glasgow - - -	2,129
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Hawk - - -	Liverpool - - -	1,079	Ida - - -	Waterford - - -	2,624
Hawk - - -	- ditto - - -	1,409	Imogene - - -	Glasgow - - -	2,265
Hawk - - -	London - - -	513	Imperial - - -	London - - -	161
Hawthorns - - -	- ditto - - -	342	Imperial - - -	Lowestoft - - -	1,425
Hayti - - -	Liverpool - - -	1,346	Imperial Prince - - -	Shields - - -	1,706
Heather Bell - - -	Aberdeen - - -	2,017	Improvement - - -	Liverpool - - -	1,327
Heather Bell - - -	Bridgwater - - -	720	Inca - - -	- ditto - - -	1,099
Heather Bell - - -	Liverpool - - -	1,391	Index - - -	London - - -	467
Heather Bell - - -	Shields - - -	1,777	India - - -	Glasgow - - -	2,165
Heather Bell - - -	Sunderland - - -	1,927	Indiana - - -	London - - -	320
Heaton Hall - - -	Newcastle - - -	1,557	Industry - - -	Glasgow - - -	2,108
Hebe - - -	London - - -	422	Industry - - -	Newcastle - - -	1,480
Hecla - - -	Dublin - - -	2,544	Industry - - -	Sunderland - - -	1,876
Hecla - - -	Glasgow - - -	2,134	Industry - - -	Teignmouth - - -	1,983
Hecla - - -	Hull - - -	949	Insolent - - -	London - - -	183
Hecla - - -	Shields - - -	1,735	Integrity - - -	Middlesborough - - -	1,447
Hector - - -	Sunderland - - -	1,933	Interloper - - -	London - - -	505
Helen - - -	Liverpool - - -	1,166	Inverary Castle - - -	Glasgow - - -	2,161
Helen - - -	London - - -	495	Invincible - - -	- ditto - - -	2,067
Helen Denny - - -	- ditto - - -	565	Invincible - - -	Liverpool - - -	1,064
Helen M'Gregor - - -	Greenock - - -	2,345	Iona - - -	Glasgow - - -	2,226
Helen M'Gregor - - -	Hull - - -	996	Iona - - -	London - - -	568
Helen M'Gregor - - -	Sunderland - - -	1,900	Ionian - - -	Liverpool - - -	1,138
Helena - - -	Liverpool - - -	1,243	Iowa - - -	Waterford - - -	2,617
Hellan - - -	South Shields - - -	1,784	Ipswich - - -	London - - -	550
Hellenis - - -	London - - -	346	Irene - - -	- ditto - - -	93
Helvellyn - - -	Lancaster - - -	1,021	Irishman - - -	Glasgow - - -	2,200
Helvetia - - -	Liverpool - - -	1,819	Iron Duke - - -	Cardiff - - -	792
Henry Bell - - -	Glasgow - - -	2,114	Iron Duke - - -	Dublin - - -	2,525
Henry Morton - - -	London - - -	304	Iron Era - - -	Hartlepool, West - - -	903
Henry Southan - - -	Swansea - - -	1,971	Iron King - - -	Liverpool - - -	1,067
Henry Wright - - -	Shields - - -	1,662	Iron King - - -	London - - -	538
Her Majesty - - -	Goole - - -	871	Iron Master - - -	Middlesborough - - -	1,443
Her Majesty - - -	Liverpool - - -	1,860	Ironsides - - -	Liverpool - - -	1,399
Her Majesty - - -	Portsmouth - - -	1,624	Irwell - - -	Hull - - -	990
Herald - - -	Hull - - -	971	Isabel - - -	Glasgow - - -	2,297
Hercules - - -	Bristol - - -	739	Isabella - - -	Portsmouth - - -	1,631
Hercules - - -	Glasgow - - -	2,304	Isabella Croll - - -	Liverpool - - -	1,295
Hercules - - -	Liverpool - - -	1,166	Isca - - -	Newport - - -	1,608
Hercules - - -	London - - -	56	Isis - - -	Liverpool - - -	1,210
Hercules - - -	Perth - - -	2,437	Island Queen - - -	Hartlepool, West - - -	904

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Islay - - -	Glasgow - -	2,091	Jutland - - -	Hull - -	964
Isle of Arran - - -	Newcastle - -	1,567	" K " - - -	Leith - -	2,401
Isle of Axholme - -	Gainsborough -	858	Kafraria - - -	London - -	521
Islesman - - -	Port Glasgow -	2,441	Kangaroo - - -	Liverpool - -	1,136
Italia - - -	London - -	330	Kate - - -	Cardiff - -	801
Italian - - -	Liverpool - -	1,172	Kate - - -	London - -	418
J. M. Strachan - - -	London - -	691	Kate - - -	Preston - -	1,637
J. P. Almond - - -	Shields - -	1,715	Kate - - -	Scarborough -	1,650
J. R. Hinde - - -	London - -	520	Kedar - - -	Glasgow - -	2,151
Jabez Bunting - - -	Preston - -	1,638	Kelpie - - -	London - -	450
Jackal - - -	Glasgow - -	2,081	Kenilworth - - -	- ditto - -	566
Jackall - - -	London - -	179	Kent - - -	- ditto - -	51
Jamaica Packet - - -	Glasgow - -	2,212	Kent - - -	- ditto - -	337
James - - -	Greenock - -	2,351	Kepler - - -	Liverpool - -	1,223
James Atherton - - -	Liverpool - -	1,043	Killarney - - -	Goole - -	877
James Conley - - -	Aberystwith -	710	Killingworth - - -	Sunderland -	1,943
James Joicey - - -	London - -	428	Kilman - - -	Gloucester -	861
James Kennedy - - -	Liverpool - -	1,118	Kin Lin - - -	Ayr - -	2,042
James Mason - - -	Newcastle - -	1,536	King Eyo Honesty 2d	Liverpool - -	1,152
James Southern - - -	London - -	658	Kinghorn - - -	Leith - -	2,434
James Watt - - -	Glasgow - -	2,111	Kingsbridge Packet	Dartmouth -	829
James Watt - - -	Hull - -	935	Kingston - - -	Cork - -	2,463
Jane - - -	Bristol - -	736	Kingstown - - -	Dublin - -	2,542
Jane Bacon - - -	Liverpool - -	1,335	Kinloch - - -	Leith - -	2,429
Jane Cochrane - - -	Greenock - -	2,350	Kinsale - - -	Glasgow - -	2,321
Jane and Phoebe - -	Middlesborough	1,441	Kirkless - - -	Liverpool - -	1,355
Janet - - -	Sligo - -	2,579	Kitten - - -	Newcastle -	1,540
Janet Tennant - - -	London - -	429	Knight Templar - -	Liverpool - -	1,333
Japan - - -	Glasgow - -	2,288	Koina - - -	- ditto - -	1,305
Japan - - -	London - -	656	Kong Brage - - -	- ditto - -	1,137
Jarrow - - -	- ditto - -	113	Koning Willem III. -	Glasgow - -	2,293
Jarrow - - -	Newcastle - -	1,492	Krishna - - -	Liverpool - -	1,363
Jarrow - - -	- ditto - -	1,578	Kurrachee - - -	Glasgow - -	2,168
Jasper - - -	Glasgow - -	2,324	Kyles - - -	- ditto - -	2,281
Jasper - - -	Greenock - -	2,355	La Plata - - -	Aberdeen - -	2,028
Java - - -	Glasgow - -	2,306	La Plata - - -	London - -	439
Jeddo - - -	London - -	257	La Plata - - -	- ditto - -	619
Jenny Jones - - -	Liverpool - -	1,347	Labouchere - - -	- ditto - -	245
Jessie Brown - - -	Glasgow - -	2,215	Laconia - - -	Liverpool - -	1,097
Joanna - - -	- ditto - -	2,126	Ladoga - - -	London - -	443
John Bowes - - -	Newcastle - -	1,481	Lady Beatrix - - -	Sunderland -	1,934
John Bull - - -	Cardiff - -	789	Lady Berriedale - -	London - -	155
John Bull - - -	Hartlepool, West	896	Lady Brisbane - - -	Glasgow - -	2,075
John Bull - - -	London - -	3	Lady Bute - - -	Cardiff - -	778
John Bull - - -	- ditto - -	269	Lady Darling - - -	Liverpool - -	1,300
John Edwin - - -	Newcastle - -	1,584	Lady Derby - - -	London - -	705
John Fenwick - - -	London - -	349	Lady Eglinton - - -	Dublin - -	2,524
John Hutton - - -	Shields - -	1,750	Lady Elgin - - -	London - -	468
John Lee - - -	London - -	82	Lady Elizabeth - - -	Ipswich - -	1,017
John Lee - - -	Shields - -	1,666	Lady Flora - - -	London - -	670
John Liddell - - -	London - -	461	Lady Franklin - - -	Glasgow - -	2,221
John Macintyre - - -	- ditto - -	448	Lady Havelock - - -	Sunderland -	1,920
John Penn - - -	- ditto - -	286	Lady James - - -	Newcastle -	1,575
John Usher - - -	Shields - -	1,713	Lady Jocelyn - - -	London - -	329
John Wells - - -	Goole - -	879	Lady Kelburn - - -	Glasgow - -	2,063
John and Mary - - -	Greenock - -	2,360	Lady Londresborough	Scarborough -	1,649
John and William - -	Newcastle - -	1,468	Lady Stirling - - -	London - -	549
Johore - - -	London - -	512	Lady of the Lake - -	Southampton	1,838
Jonathan Blacklock -	Shields - -	1,759	Lamblin - - -	Sunderland -	1,880
Jorawur - - -	London - -	502	Lambton - - -	- ditto - -	1,889
Joseph Cowen - - -	Newcastle - -	1,576	Lancashire - - -	Liverpool - -	1,352
Joseph Soames - - -	Hull - -	968	Lancefield - - -	Glasgow - -	2,140
Joseph Straker - - -	Newcastle - -	1,553	Lapwing - - -	Gloucester -	865
Joseph and William -	- ditto - -	1,477	Lara - - -	London - -	577
Jubilee - - -	Shields - -	1,670	Largs - - -	Glasgow - -	2,280
Judith - - -	Goole - -	866	Lark - - -	Liverpool - -	1,313
Judy - - -	Newcastle - -	1,564	Lass o'Gowrie - - -	London - -	28
Juno - - -	Hull - -	979	Lass o'Gowrie - - -	Rochester -	1,644
Jupiter - - -	Liverpool - -	1,199	Lass o'Gowrie - - -	Shields - -	1,696
Jupiter - - -	London - -	236	Latona - - -	London - -	526
Justitia - - -	- ditto - -	494	Laurel - - -	LANCASTER	1,022

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Leda - - - -	Waterford - -	2,618	Lord Clyde - - -	Dublin - - -	2,548
Lee - - - -	Cork - - - -	2,488	Lord Gough - - -	- ditto - - -	2,546
Lee - - - -	Rochester - -	1,640	Lord Harris - - -	Greenock - - -	2,840
Lees - - - -	Shields - - -	1,671	Lord John Russell -	London - - -	63
Leinster - - -	Dublin - - -	2,530	Lord Morpeth - - -	Liverpool - - -	1,255
Leinster Lass -	Drogheda - -	2,501	Lord Raglan - - -	Newcastle - - -	1,485
Leipzig - - -	London - - -	203	Lord Warden - - -	London - - -	117
Leith - - - -	Glasgow - - -	2,113	Lord William Bentinck	Glasgow - - -	2,278
Lelia Belle - -	London - - -	655	Lord Yarborough - -	Plymouth - - -	1,611
Lena - - - -	- ditto - - -	628	Lord of the Isles -	Southampton -	1,837
Lennox - - -	Glasgow - - -	2,227	Lorton - - - -	Waterford - - -	2,609
Leo - - - -	London - - -	174	Lotus - - - -	Liverpool - - -	1,218
Leonidas - - -	- ditto - - -	319	Lotus - - - -	London - - -	189
Leopard - - -	Hull - - - -	932	Louisa - - - -	Dartmouth - - -	828
Leopard - - -	Llanelly - - -	1,418	Louisa - - - -	Glasgow - - -	2,300
Leopard - - -	London - - -	296	Louisa - - - -	Southampton -	1,828
Levant - - -	Hartlepool - -	892	Louisa Ann Fanny -	London - - -	612
Leven - - - -	Glasgow - - -	2,228	Louisa Wallace - -	Glasgow - - -	2,273
Leviathan - - -	Leith - - - -	2,379	Louise Crawshay - -	Newcastle - - -	1,548
Liberty - - -	London - - -	302	Louisiana - - - -	Liverpool - - -	1,262
Liberty - - -	Shields - - -	1,714	Love Bird - - - -	London - - -	692
Libra - - - -	London - - -	662	Lucerne - - - -	Sunderland - -	1,931
Life Guard - -	Shields - - -	1,701	Lucy - - - -	Liverpool - - -	1,235
Lightning - - -	Hull - - - -	999	Lucy - - - -	London - - -	231
Lightning - - -	Glasgow - - -	2,093	Lumley - - - -	Sunderland - -	1,948
Lightning - - -	Shields - - -	1,761	Luna - - - -	London - - -	551
Lily - - - -	Cork - - - -	2,486	Luxor - - - -	Liverpool - - -	1,307
Lily - - - -	Llanelly - - -	1,420	Lyle - - - -	Glasgow - - -	2,275
Lily - - - -	Preston - - -	1,634	Lynx - - - -	- ditto - - -	2,115
Lily of the West	Aberdeen - -	2,025	Lynx - - - -	Liverpool - - -	1,259
Limena - - -	Liverpool - -	1,354	Lyon - - - -	Sunderland - -	1,886
Limerick - - -	Dublin - - -	2,553	Lyons - - - -	Newhaven - - -	1,603
Limerick - - -	Limerick - -	2,566			
Lincolnshire -	Hull - - - -	986	M. E. Clarke - - -	London - - -	702
Lion - - - -	Bristol - - -	742	Maas - - - -	- ditto - - -	579
Lion - - - -	Hull - - - -	1,000	Macedon - - - -	Greenock - - -	2,357
Lion - - - -	Liverpool - -	1,161	Macgregor - - - -	London - - -	596
Lion - - - -	London - - -	137	Macgregor Laird - -	- ditto - - -	361
Lion - - - -	Londonderry -	2,571	Madras - - - -	Glasgow - - -	2,225
Lion - - - -	Shields - - -	1,699	Madras - - - -	London - - -	83
Lion - - - -	- ditto - - -	1,731	Maggie Lauder - - -	Liverpool - - -	1,247
Lion - - - -	Waterford - -	2,588	Magician - - - -	London - - -	15
Lioness - - -	Dublin - - -	2,538	Magna Charta - - -	Newcastle - - -	1,582
Lioness - - -	Falmouth - -	842	Magnet - - - -	London - - -	120
Lioness - - -	Liverpool - -	1,087	Magnet - - - -	Waterford - - -	2,586
Little Eastern -	London - - -	281	Magnetic - - - -	Belfast - - -	2,455
Little Hattie -	Glasgow - - -	2,218	Magnetic - - - -	London - - -	485
Little John - -	Shields - - -	1,782	Mahamuddy - - - -	Glasgow - - -	2,277
Little Paddy - -	Cork - - - -	2,469	Maid of Kent - - -	London - - -	370
Little Western -	Middlesborough	1,440	Maid of Orleans - -	Glasgow - - -	2,104
Little Western -	Scilly - - -	1,651	Maid of the May - -	Ballina - - -	2,447
Liverpool - - -	Liverpool - -	1,224	Maightdean na Herradh	Glasgow - - -	2,318
Liverpool - - -	Sligo - - - -	2,580	Majestic - - - -	Newcastle - - -	1,466
Livorno - - -	Glasgow - - -	2,155	Malakoff - - - -	London - - -	572
Lizzie - - - -	Liverpool - -	1,803	Mallorea - - - -	- ditto - - -	602
Llama - - - -	Glasgow - - -	2,316	Malta - - - -	Glasgow - - -	2,323
Llandaff - - -	Cardiff - - -	802	Malta - - - -	London - - -	243
Lochfine - - -	Glasgow - - -	2,201	Manchester - - - -	Hull - - - -	918
Lochgail - - -	- ditto - - -	2,100	Manchester - - - -	Liverpool - - -	1,031
Lochlong - - -	- ditto - - -	2,123	Marathon - - - -	Glasgow - - -	2,131
Lodona - - - -	Hull - - - -	959	Marco Polo - - - -	Sunderland - -	1,911
Lomonosoff - -	Newcastle - -	1,500	Margam Abbey - - -	London - - -	704
London - - - -	Dundee - - -	2,048	Margaret - - - -	Newcastle - - -	1,479
London - - - -	London - - -	888	Margaret - - - -	- ditto - - -	1,579
London - - - -	- ditto - - -	571	Margaret - - - -	Shields, South	1,794
London Pride -	- ditto - - -	163	Margaret Ansley - -	London - - -	315
Londonderry -	Sunderland -	1,887	Margaret and Mary -	Shields - - -	1,669
Londos - - - -	Goole - - - -	875	Margaretha Stevenson	Glasgow - - -	2,136
Long Ditton - -	London - - -	266	Marhatta - - - -	- ditto - - -	2,309
Long Ditton - -	- ditto - - -	576	Marie - - - -	London - - -	583
Lord Alfred Paget	- ditto - - -	649	Marie Stuart - - -	Leith - - - -	2,415
Lord Ashley - -	Grimsby - - -	887	Mariner - - - -	Glasgow - - -	2,179
Lord Cardigan -	- ditto - - -	890	Mariner - - - -	Shields - - -	1,756

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Marmion	London	656	Minnet	Yarmouth	2,011
Marquis	Cardiff	793	Minnie	London	475
Marseille	Shields	1,736	Minnow	Preston	1,636
Marseilles	Newhaven	1,601	Minos	Swansea	1,974
Marshall	Newcastle	1,539	Miranda	London	633
Marshland	Hull	985	Miranda	- ditto	697
Martaban	Glasgow	2,313	Mitchells	- ditto	317
Martello	Newcastle	1,472	Modern Greece	- ditto	274
Martin	London	364	Mæander	Liverpool	1,078
Martlet	Hull	926	Mona	London	436
Mary	Cardiff	781	Monarch	- ditto	16
Mary	Liverpool	1,249	Monarch	- ditto	109
Mary	- ditto	1,275	Monarch	Portsmouth	1,630
Mary	London	665	Monarch	Southampton	1,823
Mary	Newcastle	1,470	Mongolia	London	647
Mary	- ditto	1,512	Montagu	Liverpool	1,115
Mary Agnes	Liverpool	1,134	Montezuma	Waterford	2,616
Mary Ann	Hull	947	Montrose	Newcastle	1,531
Mary Austin	Shields, South	1,803	Mooltan	London	313
Mary Jane	Glasgow	2,073	Moravian	Glasgow	2,245
Mary Jane	Newcastle	1,532	Morfa	Swansea	1,976
Mary Nixon	- ditto	1,587	Morleys	Shields	1,653
Mary and Ella	Glasgow	2,248	Morna	Leith	2,420
Maryport	Maryport	1,431	Morocco	Glasgow	2,153
Massilia	London	291	Morro	Liverpool	1,157
Matanzas	Liverpool	1,379	Moselle	London	89
Matrimony	London	24	Moselle	Shields, South	1,787
Maude Campbell	- ditto	591	Mosquito	Cork	2,493
Mauritius	- ditto	362	Moulmein	Glasgow	2,142
Mauritius	- ditto	673	Mountaineer	- ditto	2,074
Mauritius	Southampton	1,850	Mula	Liverpool	1,286
May Flower	Liverpool	1,201	Mulgrave	Newcastle	1,543
May Queen	Hartlepool, West	912	Munster	Dublin	2,535
May Queen	London	529	Myrtle	Glasgow	2,268
Mazagon	- ditto	238	Myrtle	Lancaster	1,026
Medea	- ditto	581	Mystery	London	92
Medina	Southampton	1,819	Mystery	Newcastle	1,498
Medora	London	530	Mystery	Newry	2,576
Medusa	Wisbeach	2,004	Mystery	Plymouth	1,617
Medway	London	674	Naiad	London	368
Melbourne	- ditto	476	Nan Zing	Glasgow	2,160
Melita	Liverpool	1,239	Napoleon	London	211
Memnon	- ditto	1,171	Napoli	Glasgow	2,256
Memphis	Sunderland	1,949	Narwhal	Dundee	2,054
Mercury	Newcastle	1,556	Natal	Southampton	1,853
Mercury	Shields, South	1,805	Natalian	London	650
Merlin	Port Glasgow	2,438	Nautilus	Hull	953
Merrimac	Bristol	766	Neath Abbey	Swansea	1,982
Mermaid	London	563	Negapatam	London	629
Mersey	Liverpool	1,039	Nelly	- ditto	272
Mersey	London	261	Nelly	Middlesborough	1,456
Messenger	Shields	1,737	Nelly	- ditto	1,462
Messenger	Shields, South	1,786	Nelson	Glasgow	2,094
Messina	Glasgow	2,166	Nelson	London	233
Meteor	Middlesborough	1,463	Nemesis	- ditto	215
Metis	Ipswich	1,014	Nepaul	- ditto	253
Metropolitan	London	276	Neptune	Bristol	732
Mexican	Liverpool	1,292	Neptune	Dundee	2,047
Michel	Glasgow	2,237	Neptune	Liverpool	1,080
Middlesbrough	Middlesbrough	1,434	Neptune	London	72
Midge	London	343	Neptune	- ditto	399
Midge	- ditto	462	Nerbudda	Glasgow	2,279
Midland	Liverpool	1,383	Nerbudda	Liverpool	1,378
Milan	- ditto	1,089	Nereid	Waterford	2,620
Milbanke	Sunderland	1,945	Netherton	Shields	1,875
Milford	Bristol	750	Neva	Hull	1,008
Milford Haven	London	575	New Pelton	Newcastle	1,553
Milo	Hull	1,007	Newburn	London	318
Minerva	Liverpool	1,408	Newcastle	Arundel	712
Minerva	London	626	Newcastle	Newcastle	1,535
Minister Thorbecke	Hull	948	Newcastle	- ditto	1,569
Minho	Liverpool	1,068	Newcastle	Shields, South	1,790
Minna	Waterford	2,593			

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Newhaven - - -	London - - -	78	Orwell - - -	London - - -	465
Newport - - -	Liverpool - - -	1,202	Orwell - - -	- ditto - - -	555
Newsy - - -	London - - -	405	Osborne - - -	Leith - - -	2,400
Newton - - -	Liverpool - - -	1,309	Oscar - - -	Glasgow - - -	2,118
Newton Colville - - -	Wisbeach - - -	2,003	Oscar - - -	Leith - - -	2,419
Niagara - - -	Glasgow - - -	2,087	Osiris - - -	Liverpool - - -	1,248
Nicolai 1st - - -	Liverpool - - -	1,216	Osprey - - -	Cork - - -	2,476
Night Hawk - - -	- ditto - - -	1,287	Ossian - - -	Leith - - -	2,418
Nightwatch - - -	Cardiff - - -	779	Ostrich - - -	Glasgow - - -	2,132
Nile - - -	Hull - - -	1,005	Otago - - -	London - - -	460
Nile - - -	Liverpool - - -	1,146	Otentosama - - -	Glasgow - - -	2,267
Nile - - -	- ditto - - -	1,415	Ottawa - - -	Liverpool - - -	1,066
Nimrod - - -	Cardiff - - -	797	Ottawa - - -	London - - -	653
Nimrod - - -	Glasgow - - -	2,103	Otter - - -	- ditto - - -	94
Nippon - - -	London - - -	676	Otter - - -	Newcastle - - -	1,487
Nora - - -	Waterford - - -	2,603	Ovington - - -	Sunderland - - -	1,881
Nora Creina - - -	Cowes - - -	826	Ouse - - -	Hull - - -	961
Norfolk - - -	Hull - - -	987	Owl - - -	Liverpool - - -	1,281
Norfolk - - -	Yarmouth - - -	2,015			
Norfolk Hero - - -	Dublin - - -	2,541	Pacha - - -	Hull - - -	972
Norfolk Hero - - -	Maryport - - -	1,428	Pacific - - -	- ditto - - -	948
Norman - - -	Southampton - - -	1,846	Pacific - - -	Liverpool - - -	1,337
Normanby - - -	Shields - - -	1,764	Pacific - - -	London - - -	352
Normandy - - -	Newhaven - - -	1,600	Pacific - - -	- ditto - - -	608
Normandy - - -	Southampton - - -	1,842	Palermo - - -	Glasgow - - -	2,150
Norma - - -	London - - -	111	Palestine - - -	- ditto - - -	2,116
Norse - - -	- ditto - - -	553	Palmerston - - -	Dover - - -	836
Norseman - - -	Glasgow - - -	2,224	Panther - - -	Bristol - - -	744
Norseman - - -	Southampton - - -	1,854	Panther - - -	Hull - - -	958
North Eastern - - -	Newcastle - - -	1,562	Panther - - -	London - - -	76
North Heath - - -	London - - -	484	Paragon - - -	Liverpool - - -	1,117
North Kent - - -	- ditto - - -	664	Paragon - - -	Shields, South - - -	1,788
North Star - - -	Newcastle - - -	1,514	Paraguay - - -	Waterford - - -	2,614
Northam - - -	London - - -	235	Parana - - -	London - - -	144
Northern Light - - -	Shields - - -	1,723	Parana - - -	Waterford - - -	2,613
Northumberland - - -	Ardrossan - - -	2,036	Paris - - -	Leith - - -	2,423
Northumberland - - -	Liverpool - - -	1,298	Parthenon - - -	Sunderland - - -	1,918
Northumberland - - -	Shields - - -	1,655	Pasha - - -	Newcastle - - -	1,503
Northumberland - - -	- ditto - - -	1,746	Pathfinder - - -	London - - -	651
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Nyanza - - -	London - - -	584	Pearl - - -	Greenock - - -	2,347
Nymph - - -	Leith - - -	2,428	Pearl - - -	Grimsby - - -	884
Nymph - - -	London - - -	85	Pearl - - -	Leith - - -	2,427
			Pearl - - -	Shields - - -	1,763
Ocean - - -	Newcastle - - -	1,457	Pearl - - -	Southampton - - -	1,813
Ocean Bride - - -	Fleetwood - - -	850	Peep o'-Day Boy - - -	Grimsby - - -	882
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Octa - - -	Hull - - -	956	Pekin - - -	London - - -	34
Oder - - -	- ditto - - -	955	Pelaw - - -	Shields, South - - -	1,798
Olinda - - -	Liverpool - - -	1,323	Pelican - - -	Cork - - -	2,472
Olive - - -	Newcastle - - -	1,488	Pelican - - -	London - - -	580
Olive Branch - - -	Shields - - -	1,773	Pembrokeshire - - -	Milford - - -	1,464
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Ondine - - -	Dover - - -	834	Pendennis - - -	Falmouth - - -	841
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Oneida - - -	- ditto - - -	242	Penguin - - -	Glasgow - - -	2,210
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Onyx - - -	Shields - - -	1,726	Pennsylvania - - -	Liverpool - - -	1,238
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Oread - - -	London - - -	186	Percy - - -	Shields - - -	1,747
Orient - - -	Leith - - -	2,406	Perseverance - - -	Bridgewater - - -	717
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Peru - - -	Liverpool - - -	1,184	Precursor - - -	London - - -	18
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Peruvian - - -	Glasgow - - -	2,208	Preston Belle - - -	Liverpool - - -	1,370
Peruvian - - -	London - - -	589	Preussischer Adler - - -	Cork - - -	2,473
Pet - - -	Grangemouth - - -	2,332	Pride of Erin - - -	Dundalk - - -	2,558
Peter Landberg - - -	Liverpool - - -	1,404	Pride in the North - - -	Sunderland - - -	1,865
Petersburg - - -	Leith - - -	2,426	Primus - - -	Whitby - - -	1,997
Petrel - - -	Bridgwater - - -	719	Prince - - -	Dublin - - -	2,513
Petrel - - -	Glasgow - - -	2,117	Prince - - -	Hull - - -	927
Petrel - - -	Ipswich - - -	1,015	Prince - - -	Ipswich - - -	1,012
Petrel - - -	London - - -	390	Prince - - -	Liverpool - - -	1,254
Petro - - -	Glasgow - - -	2,217	Prince - - -	London - - -	285
Pharos - - -	Aberdeen - - -	2,026	Prince - - -	- ditto - - -	426
Pharos - - -	Leith - - -	2,378	Prince - - -	Weymouth - - -	1,985
Phœbe - - -	London - - -	316	Prince Albert - - -	Liverpool - - -	1,052
Phoenix - - -	Liverpool - - -	1,206	Prince Albert - - -	London - - -	434
Phoenix - - -	Newport - - -	1,605	Prince Albert - - -	Newcastle - - -	1,470
Phoenix - - -	Southampton - - -	1,833	Prince Albert - - -	Portsmouth - - -	1,627
Pilot - - -	Cardiff - - -	795	Prince Albert - - -	Whitehaven - - -	1,993
Pilot - - -	Cork - - -	2,464	Prince Alfred - - -	Fleetwood - - -	848
Pilot - - -	- ditto - - -	2,491	Prince Alfred - - -	London - - -	234
Pilot - - -	Dartmouth - - -	830	Prince Alfred - - -	Shields, South - - -	1,795
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Pilot - - -	Hull - - -	924	Prince Arthur - - -	Dublin - - -	2,517
Pilot - - -	London - - -	142	Prince Arthur - - -	Liverpool - - -	1,304
Pilot - - -	- ditto - - -	263	Prince Cadwgan - - -	Aberystwith - - -	708
Pilot - - -	- ditto - - -	570	Prince Consort - - -	Aberdeen - - -	2,024
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Pilot - - -	Sunderland - - -	1,868	Prince Kung - - -	- ditto - - -	478
Pilot - - -	- ditto - - -	1,882	Prince Patrick - - -	Fleetwood - - -	846
Pilot - - -	Yarmouth - - -	2,014	Prince of Hesse - - -	London - - -	592
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Pilots - - -	Shoreham - - -	1,811	Prince of Wales - - -	Dublin - - -	2,516
Pioneer - - -	Belfast - - -	2,454	Prince of Wales - - -	Liverpool - - -	1,200
Pioneer - - -	Glasgow - - -	2,071	Prince of Wales - - -	London - - -	62
Pioneer - - -	- ditto - - -	2,138	Prince of Wales - - -	Newcastle - - -	1,527
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Pioneer - - -	London - - -	132	Prince of Wales - - -	Preston - - -	1,633
Pioneer - - -	- ditto - - -	249	Prince of Wales - - -	Swansea - - -	1,967
Pioneer - - -	- ditto - - -	515	Prince of Wales - - -	Whitehaven - - -	2,001
Pioneer - - -	- ditto - - -	652	Princess - - -	Cork - - -	2,462
Pioneer - - -	Londonderry - - -	2,573	Princess - - -	Dublin - - -	2,513
Pioneer - - -	Shields - - -	1,739	Princess - - -	Plymouth - - -	1,618
Pioneer - - -	Southampton - - -	1,829	Princess - - -	Shields - - -	1,682
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Pisano - - -	Liverpool - - -	1,856	Princess Alexandra - - -	Limerick - - -	2,565
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Poonah - - -	London - - -	413	Progress - - -	Newcastle - - -	1,551
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Powerful - - -	Hull - - -	938	Prudhoe - - -	Shields - - -	1,770
Powerful - - -	Liverpool - - -	1,046	Ptarmigan - - -	Glasgow - - -	2,314
Powerful - - -	London - - -	221	Ptolemy - - -	Liverpool - - -	1,340
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Queen - - - -	Plymouth - -	1,610	Rhoda - - - -	Glasgow - - -	2,238
Queen - - - -	St. Ives - - -	1,647	Rhone - - - -	Liverpool - -	1,105
Queen - - - -	Shields - - -	1,678	Rhone - - - -	London - - -	675
Queen - - - -	Southampton -	1,817	Richmond - - - -	Liverpool - -	1,214
Queen - - - -	Sunderland - -	1,883	Rifle - - - -	London - - -	306
Queen - - - -	Whitehaven - -	1,999	Rifleman - - - -	Cardiff - - -	784
Queen Esther - -	London - - -	232	Rifleman - - - -	London - - -	335
Queen Victoria - -	- ditto - - -	9	Rio de la Plata - -	- ditto - - -	547
Queen of Scotland -	Hull - - - -	969	Rio Parana - - - -	Greenock - - -	2,365
Queen of Sheba - -	Greenock - - -	2,346	Ripon - - - -	London - - -	360
Queen of the Belgians	London - - -	883	Rival - - - -	Liverpool - -	1,037
Queen of the Fairies -	- ditto - - -	677	River King - - - -	Middlesborough -	1,444
Queen of the Isles -	Aberystwith -	707	River Queen - - - -	London - - -	199
Queen of the Isles -	Ipswich - - -	1,018	River Queen - - - -	Middlesborough -	1,442
Queen of the Orwell -	- ditto - - -	1,016	Rob Roy - - - -	Grangemouth -	2,326
Queen of the South -	London - - -	336	Rob Roy - - - -	Hull - - - -	951
Queen of the Thames	Ipswich - - -	1,018	Rob Roy - - - -	Shields - - -	1,678
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Quickstep - - -	Liverpool - -	1,232	Robert Bruce - - - -	Alloa - - - -	2,082
R. T. C., No. 1 - -	Newcastle - -	1,552	Robert Bruce - - - -	Liverpool - -	1,267
Racer - - - -	London - - -	225	Robert Bruce - - - -	London - - -	19
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Rainbow - - - -	Newcastle - -	1,544	Robert Burns - - - -	Shields - - -	1,729
Raith - - - -	Kirkaldy - - -	2,368	Robert Burns - - - -	- ditto - - -	1,767
Rajah - - - -	London - - -	627	Robert Chambers - -	Newcastle - - -	1,546
Rambler - - - -	- ditto - - -	617	Robert Ingham - - -	Liverpool - -	1,192
Rambler - - - -	Maryport - - -	1,429	Robert Lowe - - - -	London - - -	265
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Rangatira - - -	Glasgow - - -	2,176	Robert Pow - - - -	Shields - - -	1,711
Ranger - - - -	- ditto - - -	2,119	Robert Scott - - - -	London - - -	424
Ranger - - - -	Hartlepool, West -	894	Robert Scott - - - -	Shields, South -	1,797
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Ranger - - - -	Llanelly - - -	1,419	Robert Todd - - - -	Liverpool - -	1,266
Ranger - - - -	Newcastle - -	1,478	Robert and Jane - -	Newcastle - -	1,594
Ranger - - - -	Newry - - - -	2,577	Roberts and Ann - -	Shields - - -	1,663
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Rangitoto - - -	London - - -	616	Roe - - - -	Lancaster - - -	1,029
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Rangoon - - - -	- ditto - - -	431	Roman - - - -	Southampton -	1,841
Rapid - - - -	Bridgwater - -	716	Rona - - - -	London - - -	365
Rapid - - - -	Glasgow - - -	2,101	Rosa - - - -	Waterford - -	2,610
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Rattlesnake - - -	London - - -	598	Rose - - - -	Limerick - - -	2,563
Ravenna - - - -	Newcastle - -	1,534	Rose - - - -	London - - -	474
Ravensbury - - -	London - - -	686	Rose Diamond - - - -	Liverpool - -	1,311
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Red Lion - - - -	Southampton -	1,826	Ross D. Mangles - -	London - - -	134
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Royal Princess - - -	Llanelly - - -	1,421	Scotia - - -	London - - -	442
Royal Saxon - - -	Liverpool - - -	1,362	Scotia - - -	- ditto - - -	558
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Royal Victoria - - -	Lowestoft - - -	1,423	Scottish Maid - - -	Glasgow - - -	2,261
Royal William - - -	Dublin - - -	2,504	Scottish Maid - - -	Irvine - - -	2,366
Ruahine - - -	London - - -	657	Scottish Maid - - -	Newcastle - - -	1,513
Ruby - - -	Greenock - - -	2,354	Scottish Maid - - -	Sunderland - - -	1,875
Ruby - - -	Leith - - -	2,397	Scud - - -	London - - -	389
Ruby - - -	Liverpool - - -	1,273	Sea Flower - - -	Dublin - - -	2,523
Ruby - - -	- ditto - - -	1,368	Seaflower - - -	Sunderland - - -	1,908
Ruby - - -	Southampton - - -	1,812	Sea Gull - - -	Hull - - -	992
Ruby - - -	Wexford - - -	2,628	Sea Hawk - - -	London - - -	432
Rustan - - -	Liverpool - - -	1,283	Sea Horse - - -	Hull - - -	991
Ryhope - - -	London - - -	299	Sea Horse - - -	Sunderland - - -	1,870
Ryhope - - -	Sunderland - - -	1,912	Sea King - - -	Liverpool - - -	1,278
			Sea King - - -	London - - -	604
Sabrina - - -	Cork - - -	2,474	Sea Mew - - -	Ardrossan - - -	2,040
Sabrina - - -	London - - -	672	Sea Nymph - - -	Chester - - -	815
Sahara - - -	- ditto - - -	660	Sea Nymph - - -	Gainsborough - - -	855
Saida - - -	- ditto - - -	637	Sea Queen - - -	Liverpool - - -	1,284
Sailor - - -	Yarmouth - - -	2,010	Sea Swallow - - -	London - - -	130
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			Secret - - -	Hull - - -	944
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St. Patrick - - -	Dublin - - -	2,557	Sesostriis - - -	Liverpool - - -	1,388
St. Patrick - - -	Liverpool - - -	1,219	Setubal - - -	London - - -	667
St. Petersburg - - -	Hull - - -	928	Severn - - -	Bristol - - -	734
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Samphire - - -	London - - -	369	Shamrock - - -	Londonderry - - -	2,568
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Sampson - - -	Hull - - -	934	Shandon - - -	Glasgow - - -	2,080
Samson - - -	Belfast - - -	2,452	Shannon - - -	Hull - - -	916
Samson - - -	Bristol - - -	738	Shannon - - -	London - - -	273
Samson - - -	Dundee - - -	2,049	Shannon - - -	Sunderland - - -	1,925
Samson - - -	Greenock - - -	2,352	Sheffield - - -	Hull - - -	919
Samson - - -	Leith - - -	2,374	Sheffield - - -	Liverpool - - -	1,390
Samson - - -	Liverpool - - -	1,060	Shelburne - - -	Lancaster - - -	1,027
Samson - - -	Llanelly - - -	1,417	Shooey Leen - - -	London - - -	435
Samson - - -	London - - -	17	Sibyl - - -	- ditto - - -	32
Samson - - -	- ditto - - -	27	Sicilia - - -	Glasgow - - -	2,173
Samson - - -	Shields - - -	1,712	Sicilian - - -	Liverpool - - -	1,145
Samson - - -	Sunderland - - -	1,898	Sidon - - -	Glasgow - - -	2,149
			Silloth - - -	Carlisle - - -	804
Samuel Laing - - -	London - - -	267	Simla - - -	London - - -	133
San Carlos - - -	Liverpool - - -	1,148	Singapore - - -	- ditto - - -	73
Santiago - - -	- ditto - - -	1,369	Sir Charles Napier - - -	Glasgow - - -	2,105
Sapphire - - -	- ditto - - -	1,393	Sir Colin Campbell - - -	- ditto - - -	2,097
Sapphire - - -	Southampton - - -	1,832	Sir Colin Campbell - - -	Newcastle - - -	1,496
Sappho - - -	Hull - - -	981	Sir Edward Banks - - -	London - - -	10
Sarah Garcia - - -	Glasgow - - -	2,303	Sir George Grey - - -	Shields - - -	1,684
Sarah Rogerson - - -	Newcastle - - -	1,693	Sir Harry Parkes - - -	London - - -	415
Sardinian - - -	London - - -	166	Sir Isaac Newton - - -	Cardiff - - -	800
Sardis - - -	- ditto - - -	632	Sir James Duke - - -	London - - -	340
Satellite - - -	Glasgow - - -	2,069	Sir John Lawrence - - -	- ditto - - -	644
Satellite - - -	Liverpool - - -	1,032	Sir Robert Hawkes - - -	- ditto - - -	79
Saxon - - -	London - - -	414	Sir Robert Peel - - -	- ditto - - -	67
Saxon - - -	Southampton - - -	1,840	Sir Walter Raleigh - - -	- ditto - - -	162
Saxonia - - -	London - - -	433			

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Sir Walter Raleigh -	London -	358	Sussex -	Newhaven -	1,599
Sir Walter Scott -	- ditto -	97	Swallow -	Hull -	931
Sir Walter Scott -	Shields -	1,738	Swan -	Liverpool -	1,397
Sir William Peel -	London -	237	Swan -	Middlesborough -	1,458
Sir William Wallace -	Lancaster -	1,024	Swanland -	Hull -	997
Sir William Wallace -	London -	23	Swansea -	Liverpool -	1,377
Sir William Wallace -	Sunderland -	1,960	Swift -	Cardiff -	787
Sirius -	Liverpool -	1,217	Swiftsure -	Liverpool -	1,175
Sisters -	Dublin -	2,543	Swilly -	Hull -	976
Slasher -	Liverpool -	1,181	Sydney -	Falmouth -	838
Sligo -	Sligo -	2,581	Sydney -	Glasgow -	2,219
Smyrna -	London -	481	Sydney Hall -	London -	402
Smyrna -	Hull -	977	Sylph -	Hull -	982
Snipe -	Liverpool -	1,331	Sylph -	Liverpool -	1,288
Snowdown -	Leith -	2,407	Sylph -	London -	96
Solent -	London -	107	Syria -	- ditto -	469
Solent -	Southampton -	1,843	Syrian -	Liverpool -	1,151
Solva -	London -	204			
Souter Johnny -	- ditto -	21	T. A. Gibb -	London -	621
Southampton -	Southampton -	1,831	T. D. Marshall -	Shields, South -	1,809
Southampton -	- ditto -	1,852	Ta-Pang-Nyo -	Glasgow -	2,220
Southwick -	Sunderland -	1,914	Taff -	Bristol -	727
Sovereign -	Liverpool -	1,106	Taff -	Cardiff -	782
Spartan -	Greenock -	2,363	Talbot -	Lancaster -	1,028
Speedwell -	Borrowstoness -	2,044	Talbot -	Liverpool -	1,242
Speedwell -	Hull -	962	Talca -	- ditto -	1,189
Speedwell -	Liverpool -	1,170	Taliesin -	Cardiff -	774
Spicy -	- ditto -	1,366	Talisman -	Liverpool -	1,245
Splendid -	Belfast -	2,456	Tam O'Shanter -	London -	22
Spray -	Shields, South -	1,792	Tam O'Shanter -	Shields -	1,660
Sprite -	Liverpool -	1,289	Tamar -	London -	135
Staffa -	Glasgow -	2,188	Tamianlipas -	Liverpool -	1,069
Staffa -	Leith -	2,425	Tanfield -	London -	610
Stamboul -	Greenock -	2,343	Tanjore -	- ditto -	661
Standard -	Dublin -	2,522	Taranaki -	- ditto -	695
Stanley -	London -	605	Tararua -	- ditto -	562
Star -	Cork -	2,460	Tarifa -	Glasgow -	2,270
Star -	Dublin -	2,634	Tarsset -	Sunderland -	1,947
Star -	Leith -	2,383	Tartar -	Leith -	2,392
Star -	Liverpool -	1,090	Tartar -	Liverpool -	1,054
Starlight -	London -	6	Tartar -	Middlesborough -	1,435
Stella -	Bridgwater -	721	Tartar -	Swansea -	1,965
Stella -	London -	524	Tasmanian -	London -	240
Stella -	- ditto -	625	Tasso -	Sunderland -	1,941
Stella -	Swansea -	1,973	Tay -	Dundee -	2,050
Stephenson -	Shields, South -	1,804	Teazer -	Bristol -	753
Stettin -	Leith -	2,416	Teazer -	Montrose -	2,436
Stettin -	London -	348	Teen Chang -	London -	498
Stirling -	Leith -	2,899	Tees -	Stockton -	1,859
Stirling Castle -	Allea -	2,031	Telegraph -	Chester -	816
Stockton -	Stockton -	1,858	Telegraph -	London -	292
Stork -	London -	564	Telegraph -	- ditto -	300
Storm King -	Cardiff -	775	Telegraph -	Shields -	1,690
Storm King -	Liverpool -	1,125	Telegraph -	Shields, South -	1,799
Storm Queen -	Hartlepool, West -	907	Terrible -	- ditto -	1,779
Stour -	London -	559	Terrier -	Ardrossan -	2,038
Stour -	Ramsgate -	1,939	Terrier -	Glasgow -	2,289
Stranger -	Shields -	1,778	Test -	Chester -	812
Strelna -	London -	567	Test -	Shields -	1,667
Stromboli -	Glasgow -	2,137	Thales -	Glasgow -	2,294
Sturdy -	Liverpool -	1,231	Thames -	Grangemouth -	2,331
Success -	- ditto -	1,302	Thames -	London -	344
Sultan -	Glasgow -	2,266	Thames -	- ditto -	525
Sultan -	Lancaster -	1,023	Thames -	Sunderland -	1,926
Sultan -	London -	154	Thane o' Fife -	Leith -	2,385
Sultana -	Hull -	941	The Greek -	London -	679
Sunbeam -	London -	378	The Queen -	Liverpool -	1,373
Sunbeam -	Shields -	1,730	The Perthshire Lassie -	Bristol -	762
Sunflower -	London -	164	Thebes -	Liverpool -	1,361
Superb -	Scarborough -	1,648	Theresa -	Glasgow -	2,088
Surprise -	Liverpool -	1,315	Thersalia -	Liverpool -	1,088
Susan Byrne -	Glasgow -	2,250	Thistle -	Glasgow -	2,290
Susanna -	London -	643	Thomas Bazley -	- ditto -	2,274
Susannah -	- ditto -	169	Thomas Lee -	London -	507

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Thomas Petley - - -	London - - -	87	United States - - -	Cork - - -	2,494
Thomas Powell - - -	Newport - - -	1,607	United States - - -	Liverpool - - -	1,092
Thomas Royden - - -	Liverpool - - -	1,035	Universe - - -	- ditto - - -	1,081
Thomas Wilson - - -	- ditto - - -	1,072	Upton - - -	London - - -	641
Thomas and Mary - - -	Shields - - -	1,689	Urania - - -	Yarmouth - - -	2,007
Three Daisies - - -	Liverpool - - -	1,246	Ursa Major - - -	London - - -	595
Tiber - - -	- ditto - - -	1,169	Uruguay - - -	Waterford - - -	2,612
Tiel - - -	Kirkaldy - - -	2,360			
Tiger - - -	Bristol - - -	741	Vale of Clwyd - - -	Liverpool - - -	1,342
Tiger - - -	Hull - - -	930	Valencia - - -	Glasgow - - -	2,282
Tiger - - -	Liverpool - - -	1,061	Valetta - - -	Cowes - - -	821
Tiger - - -	- ditto - - -	1,268	Valetta - - -	Glasgow - - -	2,310
Tiger - - -	London - - -	70	Valparaiso - - -	Liverpool - - -	1,110
Tiger - - -	Sunderland - - -	1,906	Vanderbyl - - -	London - - -	487
Times - - -	Leith - - -	2,414	Vanguard - - -	Aberdeen - - -	2,023
Times - - -	London - - -	212	Vanguard - - -	Cardiff - - -	790
Tim Sin - - -	- ditto - - -	473	Varina - - -	Liverpool - - -	1,230
Tintern - - -	Waterford - - -	2,601	Vartry - - -	Dublin - - -	2,550
Titan - - -	London - - -	359	Velindra - - -	Cardiff - - -	777
Tom Bowline - - -	Sunderland - - -	1,873	Velocity - - -	London - - -	371
Tom John Taylor - - -	London - - -	841	Venetia - - -	- ditto - - -	535
Tonbridge - - -	- ditto - - -	39	Venetian - - -	Liverpool - - -	1,142
Tonning - - -	- ditto - - -	122	Venezia - - -	Glasgow - - -	2,320
Torch - - -	Dublin - - -	2,536	Venezuelan - - -	Liverpool - - -	1,410
Tornado - - -	Glasgow - - -	2,311	Venice - - -	Sunderland - - -	1,962
Toward Castle - - -	Liverpool - - -	1,102	Venture - - -	Shields - - -	1,757
Tower - - -	- ditto - - -	1,036	Venus - - -	Faversham - - -	843
Towneley - - -	Newcastle - - -	1,504	Venus - - -	Glasgow - - -	2,085
Trafalgar - - -	Dublin - - -	2,514	Venus - - -	Grangemouth - - -	2,328
Transit - - -	Hull - - -	915	Venus - - -	London - - -	421
Transit - - -	London - - -	533	Vernon - - -	Liverpool - - -	1,057
Transit - - -	Southampton - - -	1,816	Verona - - -	Leith - - -	2,431
Trent - - -	London - - -	68	Vesper - - -	Liverpool - - -	1,158
Trident - - -	- ditto - - -	12	Vespera - - -	Newcastle - - -	1,559
Trinity - - -	- ditto - - -	30	Vesta - - -	Belfast - - -	2,451
Tripoli - - -	Glasgow - - -	2,191	Vesta - - -	Caernarvon - - -	768
Tristram Shandy - - -	Liverpool - - -	1,267	Vesta - - -	Glasgow - - -	2,082
Triton - - -	London - - -	25	Vesta - - -	Sunderland - - -	1,874
Triumph - - -	Liverpool - - -	1,290	Vesta - - -	Waterford - - -	2,589
Troubadour - - -	Wexford - - -	2,627	Vestal - - -	London - - -	356
True Briton - - -	London - - -	86	Viborg - - -	- ditto - - -	308
Trump - - -	Shields, South - - -	1,783	Viceroy - - -	Hull - - -	983
Tubal Cain - - -	Cardiff - - -	786	Victor - - -	Bridgwater - - -	722
Tugwell - - -	London - - -	410	Victor - - -	Dundee - - -	2,061
Tuskar - - -	Glasgow - - -	2,262	Victor - - -	Glasgow - - -	2,180
Tweed - - -	Berwick - - -	714	Victor - - -	Leith - - -	2,375
Tweed - - -	Swansea - - -	1,979	Victor - - -	London - - -	270
Twilight - - -	London - - -	7	Victoria - - -	Alloa - - -	2,034
Two Sisters - - -	Glasgow - - -	2,163	Victoria - - -	Caernarvon - - -	769
Tyne - - -	London - - -	147	Victoria - - -	Cork - - -	2,468
Tyne - - -	Shields - - -	1,700	Victoria - - -	Cowes - - -	822
Tyne - - -	- ditto - - -	1,744	Victoria - - -	Liverpool - - -	1,088
Tyne - - -	- ditto - - -	1,751	Victoria - - -	- ditto - - -	1,123
Tyne Queen - - -	Liverpool - - -	1,384	Victoria - - -	London - - -	126
Tynemouth - - -	Goole - - -	869	Victoria - - -	- ditto - - -	198
Tynemouth - - -	London - - -	381	Victoria - - -	- ditto - - -	293
Tynemouth - - -	Newcastle - - -	1,530	Victoria - - -	- ditto - - -	339
Tynemouth - - -	Shields - - -	1,720	Victoria - - -	Newcastle - - -	1,484
Typhoon - - -	London - - -	440	Victoria - - -	Shields - - -	1,707
Tyro - - -	Grimsby - - -	883	Victoria - - -	- ditto - - -	1,766
			Victoria - - -	Sunderland - - -	1,921
Uitenhage - - -	London - - -	688	Victoria Dock - - -	London - - -	178
Ulster - - -	Dublin - - -	2,532	Victory - - -	Glasgow - - -	2,184
Una - - -	Waterford - - -	2,596	Victory - - -	Liverpool - - -	1,160
Uncle Sam - - -	Goole - - -	870	Victory - - -	London - - -	20
Uncle Sam - - -	London - - -	268	Victory - - -	Shields - - -	1,657
Undine - - -	Glasgow - - -	2,263	Vienna - - -	Leith - - -	2,403
Undine - - -	London - - -	182	Vigilant - - -	Greenock - - -	2,362
Union - - -	- ditto - - -	694	Vigilant - - -	London - - -	372
United Kingdom - - -	Glasgow - - -	2,269	Vigilant - - -	- ditto - - -	516
United Kingdom - - -	Liverpool - - -	1,128	Vigilant - - -	Shields - - -	1,661
United Service - - -	Hull - - -	984	Vigilant - - -	- ditto - - -	1,716
United Service - - -	London - - -	693	Vigilant - - -	Sunderland - - -	1,901
United States - - -	Cardiff - - -	791	Viper - - -	London - - -	590

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Virgin - - - -	London - - -	519	Whisper - - - -	London - - -	586
Virginia - - - -	Liverpool - -	1,250	White Squall - - -	- ditto - - -	578
Vistula - - - -	Leith - - - -	2,391	Whiteinch - - - -	Borrowatones -	2,043
Vittoria - - - -	London - - - -	386	Whiteinch - - - -	Glasgow - - -	2,305
Vivid - - - -	Glasgow - - -	2,243	Whitwell - - - -	Sunderland - -	1,871
Vivid - - - -	London - - - -	11	Widgeon - - - -	Liverpool - - -	1,830
Vivid - - - -	- ditto - - -	477	Wilberforce - - -	Grimsby - - -	889
Vixen - - - -	Greenock - - -	2,342	Wilberforce - - -	Shields - - -	1,753
Vixen - - - -	London - - - -	569	Wilberforce - - -	- ditto - - -	1,781
Vixen - - - -	Shields - - -	1,710	Wild Rose - - - -	Liverpool - - -	1,208
Volga - - - -	London - - - -	363	Wildfire - - - -	Dundee - - -	2,056
Voltigeur - - -	Liverpool - - -	1,209	William - - - -	Cardiff - - -	799
Voltigeur - - -	Stockton - - -	1,857	William - - - -	Shields - - -	1,776
Volunteer - - -	London - - - -	321	William Burnley -	Greenock - - -	2,348
Volunteer - - -	Plymouth - - -	1,619	William Cargill -	Newcastle - - -	1,493
Volunteer - - -	Shields, South -	1,785	William Charles -	Hartlepool, West -	895
Volunteer - - -	Sunderland - -	1,929	William Connal -	Glasgow - - -	2,164
Vulcan - - - -	Glasgow - - -	2,124	William Cory - - -	London - - -	207
Vulcan - - - -	London - - - -	327	William Fawcett -	Liverpool - - -	1,034
Vulcan - - - -	- ditto - - -	514	William Hall - - -	Dublin - - -	2,539
Vulean - - - -	- ditto - - -	552	William Hunter - -	London - - -	624
Vulture - - - -	- ditto - - -	171	William Jolliffe -	- ditto - - -	26
Waipara - - - -	Belfast - - -	2,457	William M'Cormick -	Londonderry - -	2,569
Walker - - - -	Middlesborough -	1,445	William Scott - - -	Swansea - - -	1,980
Walker - - - -	Newcastle - - -	1,538	William Taylor - -	Glasgow - - -	2,296
Walker - - - -	Shields - - - -	1,780	William Wallace - -	Cork - - - -	2,482
Wallasey - - - -	Liverpool - - -	1,048	William and Jane -	Newcastle - - -	1,561
Walter Stanhope	Goole - - - -	880	William and John -	Sunderland - - -	1,879
Wansbeck - - - -	London - - - -	227	William and Mary -	Newcastle - - -	1,473
Wansbeck - - - -	Newcastle - - -	1,523	William and Mary -	Shields - - -	1,680
Wansbeck - - - -	Sunderland - -	1,867	Willing Mind - - -	Liverpool - - -	1,258
War Eagle - - -	Shields, South -	1,801	Willington - - - -	Newcastle - - -	1,573
War Eagle - - -	Stockton - - -	1,860	Willington - - - -	Plymouth - - -	1,615
Wards - - - -	Newcastle - - -	1,491	Windermere - - - -	London - - -	309
Warrior - - - -	Liverpool - - -	1,299	Windsor - - - -	Dublin - - -	2,528
Warrior - - - -	London - - - -	375	Wirral - - - -	Liverpool - - -	1,051
Warrior - - - -	- ditto - - -	416	Witch - - - -	London - - -	603
Warrior - - - -	Shields - - -	1,734	Wizard - - - -	Newcastle - - -	1,596
Warsaw - - - -	Leith - - - -	2,412	Wo Kee - - - -	London - - -	453
Wasp - - - -	Liverpool - - -	1,130	Wolf - - - -	Glasgow - - -	2,174
Water Lily - - -	Barnstaple - -	713	Woodside - - - -	Liverpool - - -	1,353
Water Lily - - -	Liverpool - - -	1,203	Wonder - - - -	- ditto - - -	1,265
Water Lily - - -	Sunderland - -	1,888	Wonder - - - -	London - - -	84
Waterloo - - - -	London - - - -	351	Wonder - - - -	- ditto - - -	195
Waterman - - - -	Newcastle - - -	1,483	Wonder - - - -	Shields - - -	1,745
Waterman, No. 1 -	London - - - -	156	Wonder - - - -	Southampton -	1,814
Waterman, No. 2 -	- ditto - - -	128	Wrecker - - - -	Newcastle - - -	1,591
Waterman, No. 3 -	- ditto - - -	131	Wren - - - -	Liverpool - - -	1,317
Waterman, No. 4 -	- ditto - - -	129	Wren - - - -	- ditto - - -	1,375
Waterman, No. 7 -	- ditto - - -	157	Wye - - - -	Bristol - - -	723
Waterman, No. 10 -	- ditto - - -	153	Wye - - - -	- ditto - - -	749
Waterman, No. 12 -	- ditto - - -	158	Wyre - - - -	London - - -	119
Watersprite - - -	- ditto - - -	190	Wyvern - - - -	Fleetwood - - -	849
Waterston - - - -	Shields - - -	1,652	X. L. - - - -	Newcastle - - -	1,574
Waterwitch - - -	Leith - - - -	2,430	X. L. - - - -	Newcastle - - -	1,469
Waterwitch - - -	London - - - -	29	Xanthe - - - -	Leith - - -	2,398
Wave - - - -	Gloucester - -	804	Xantho - - - -	Wick - - - -	2,445
Wave - - - -	London - - - -	456	Yeddo - - - -	London - - -	430
Wave of Life - -	Caernarvon - -	770	Yorkshire - - - -	Hull - - - -	1,010
Waverley - - - -	Carlisle - - -	808	Yow Yangs - - - -	London - - -	454
Waverley - - - -	- ditto - - -	810	Yuen-Tze Fee - - -	Glasgow - - -	2,205
Wear - - - -	Sunderland - -	1,950	Zaimis - - - -	Hull - - - -	967
Wearmouth - - -	London - - - -	152	Zealous - - - -	Belfast - - -	2,458
Wearmouth - - -	Sunderland - -	1,903	Zealous - - - -	London - - -	531
Welches - - - -	- ditto - - -	1,899	Zebra - - - -	Hull - - - -	930
Welcome - - - -	Shields - - -	1,864	Zephyr - - - -	Liverpool - - -	1,053
Wellesley - - - -	London - - - -	659	Zephyr - - - -	Waterford - - -	2,599
Wellington - - -	- ditto - - -	217	Zeta - - - -	Swansea - - -	1,981
Wentworth - - -	Newcastle - - -	1,586	Zingari - - - -	Hartlepool, West -	893
West Dock - - -	Hartlepool, West -	899			
West Indian - - -	Liverpool - - -	1,401			

STEAM VESSELS.

RETURN of the whole of the REGISTERED STEAM VESSELS of the United Kingdom on the 1st day of January 1866; distinguishing Vessels built of Iron, and also Vessels having Screw Propellers, and giving the Aggregate Number of Vessels, and Amount of Tonnage, with an ALPHABETICAL INDEX.

(Mr. Thomas Baring.)

*Ordered, by The House of Commons, to be Printed,
29 June 1866.*

[*Price 10d.*]

381.

Under 12 oz.

TAY RIVER.

RETURN to an Order of the Honourable The House of Commons,
dated 23 April 1866 ;—for,

A RETURN “ of the Number, Class, and Tonnage of all VESSELS which passed up the River *Tay* to Ports above *Dundee* in the Years 1855 and 1865.”

Y E A R 1 8 5 5.			Y E A R 1 8 6 5.		
Number.	Class.	Tonnage.	Number.	Class.	Tonnage.
141	Smaacks - -	5,496	87	Smaacks - -	3,384
2	Sloops - -	88	3	Sloops - -	131
14	Luggers - -	262	- - -	Luggers - -	—
259	Schooners - -	17,432	200	Schooners - -	14,642
11	Brigs - -	1,924	17	Brigs - -	2,432
—	Barques - -	- - -	3	Barques - -	591
17	Steamers - -	4,520	- - -	Steamers - -	—
444	- -	29,722	310	- -	21,180

Note.—The repeated voyages of the respective vessels are included in this Return.

General Register and Record Office
of Shipping and Seamen,
Adelaide-place, London Bridge,
24 May 1866. }

James Hughes, Inspector.

TAY RIVER.

**RETURN of the Number, Class, and Tonnage
of all Vessels which passed up the River Tay
to Ports above Dundee in the Years 1865 and
1866.**

(Sir Robert Anstruther.)

*Ordered, by The House of Commons, to be Printed,
29 May 1866.*

VESSELS REGISTERED.

RETURN to an Order of the Honourable The House of Commons,
dated 22 February 1866;—for,

RETURN “of the Number and Tonnage of BRITISH REGISTERED VESSELS, exclusive of River Steamers and Colonial Vessels, employed in the HOME and FOREIGN TRADE of the UNITED KINGDOM and CHANNEL ISLANDS (not including repeated Voyages), with the Number of MEN employed, classified according to capacity, not including Masters, for the Years 1864 and 1865.”

	1864.	1865.
Ships - - - - -	21,513	21,626
Tons - - - - -	5,208,468	5,408,451
Men - - - - -	195,756	197,643
Classification of Crews:		
Mates - - - - -	23,633	24,292
Petty Officers - - - - -	13,547	13,546
Able Seamen - - - - -	70,092	72,058
Ordinary Seamen - - - - -	19,542	19,221
Apprentices and Boys - - - - -	21,231	20,063
Other Persons - - - - -	15,194	16,241
Engineers - - - - -	2,761	3,178
Firemen - - - - -	7,717	8,724
Foreigners - - - - -	21,923	20,280
Lascars - - - - -	116	40

General Register and Record Office
of Shipping and Seamen,
Adelaide-place, London Bridge,
28 May 1866.

Jno. J. Mayo,
Registrar General.

VESSELS REGISTERED.

Return of the Number and Tonnage of British
Registered Vessels, exclusive of River Steamers
and Colonial Vessels, employed in the Home and
Foreign Trade of the United Kingdom and
Channel Islands (not including repeated Voyages),
with the Number of Men employed, classified
according to capacity, not including Masters, for
the Years 1864 and 1865.

(*Mr. Graves.*)

*Ordered, by The House of Commons, to be Printed,
30 May 1866.*

AN
ABSTRACT OF THE RETURNS
MADE TO THE
LORDS OF THE COMMITTEE OF PRIVY COUNCIL FOR TRADE,
OF
WRECKS AND CASUALTIES
WHICH OCCURRED ON AND NEAR THE
COASTS OF THE UNITED KINGDOM,
From the 1st January to the 31st December 1865.

WITH
A STATEMENT of the NUMBER of LIVES LOST and SAVED; of the AMOUNTS granted out of the MERCANTILE MARINE FUND as REWARDS for the SALVAGE of LIFE, for CONTRIBUTIONS towards the MAINTENANCE of LIFE BOATS, and for EXPENSES in connexion with the MORTAR and ROCKET APPARATUS for saving LIFE, during the same Period; and a PRÉCIS of the Special INQUIRIES instituted into the Causes of such Wrecks and Casualties, by order of the Board of Trade.

With Charts.

Presented to both Houses of Parliament by Command of Her Majesty.



LONDON:
PRINTED BY GEORGE EDWARD EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY.
FOR HER MAJESTY'S STATIONERY OFFICE.

1866.

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SYMBOLS.

I. Casualties by Stranding.

- X. Signifies a Total loss
- x. a partial loss

II. Casualties by Collision.

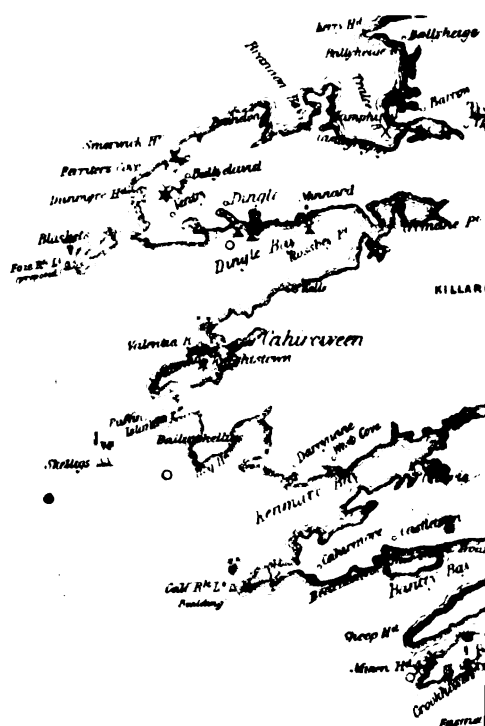
Signifies a Collision between two Steam Vessels	with total loss of both Vessels
Signifies a Collision between two Steam Vessels	with total loss of one Vessel
Signifies a Collision between two Sailing Vessels	with total loss of both Vessels
Signifies a Collision between two Sailing Vessels	with total loss of one Vessel
Signifies a Collision between two Fishing Boats	with total loss of both Vessels
Signifies a Collision between two Fishing Boats	with total loss of one Vessel
Signifies a Collision between a Steam Vessel and a Sailing Vessel	with total loss of both Vessels
Signifies a Collision between a Steam Vessel and a Sailing Vessel	with total loss of one Vessel
Signifies a Collision between a Steam Vessel and a Fishing Boat	with total loss of both Vessels
Signifies a Collision between a Steam Vessel and a Fishing Boat	with total loss of one Vessel
Signifies a Collision between a Sailing Vessel and a Fishing Boat	with total loss of both Vessels
Signifies a Collision between a Sailing Vessel and a Fishing Boat	with total loss of one Vessel

III. Casualties otherwise than by Collision or Stranding.

- ↑ Signifies a total loss of a Steam Vessel.
- † a partial loss of a Steam Vessel.
- a total loss of a Sailing Vessel.
- a partial loss of a Sailing Vessel.
- ◆ a total loss of a Fishing Boat.
- ◇ a partial loss of a Fishing Boat.

Apparatus for Saving Life.

- Life Boat Station
- Rocket Apparatus Station
- Mortar Apparatus Station



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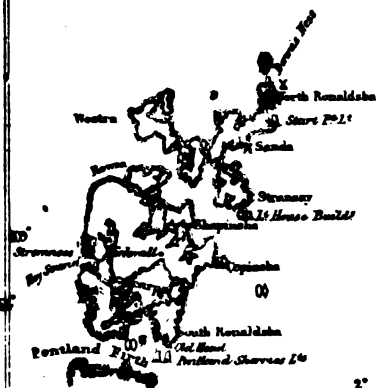
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SYMBOLS.

I. Casualties by Stranding

- x Signifies a total loss
- o Signifies a partial loss

II. Casualties by Collision.

Signifies a Collision between two Steam Vessels with total loss of both Vessels.	with total loss of one Vessel.
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Apparatus for Saving Life.

- Life Boat Station
- Rocket Apparatus
- Mortar Apparatus Station



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REGISTER.



Remarks to accompany the Wreck Return of the Board of Trade, 1865.

The number of wrecks and casualties from all causes on the coasts of the United Kingdom and in the surrounding seas reported in 1865 is 1,656. The number reported in 1864 was 1,390. The annual average number of casualties during the five years ended 1859 was 1,204; and during the five years ended 1864, 1,483.

The corrected annual average of the ten years from 1856 to 1865 inclusive is 1,395. The number reported in 1865 is therefore not only above the corrected average of the last ten years but also above the average of the preceding five years.

As has been before observed, the general average number of casualties reported will probably increase from year to year, owing to the increase in the number of ships frequenting our coasts and narrow adjoining seas, whilst the particular number for any one year will be increased or diminished according to the prevalence or absence of gales of remarkable violence and duration.

In October 1859, there was the "Royal Charter" gale and a loss of 343 ships. In January, February, and November 1861, there were north-east and south-easterly gales, which added 460 to the number of casualties. In January, October, and December 1862, there were westerly gales, with upwards of 540 casualties; and in January, March, September, October, November and December, 1863, there were westerly gales with 930 casualties. In November, 1864, there were 264 casualties, with the wind chiefly in the south-south-east and south-west, but owing to the absence of any special gales of remarkable duration and violence in 1864, the total number of casualties in that year was 274 below the number in 1863. In 1865 the gales of January, February, and March, and October, November, and December, gave 766 casualties. The gales of 1865 were chiefly from the following directions, viz.—January, from south-east to south-west, west to north-north-west; February the same, but including north; March, north-north-east, east-north-east, south-east, south-west; October, north-north-east, north-east, east-south-east, south-east, south, south-south-west, and south-west; November, south-south-west, south-west, south-west-by-south; and December, south, south-south-west, south-west, and west-south-west.

The number of ships lost or damaged in the 1656 casualties reported in 1865 is 2012, representing a registered tonnage of upwards of 377,000 tons. The number of ships in 1865 is in excess of the number in 1864 by 271, and is larger than any number yet reported. The number of ships reported is, as has been formerly stated, in excess of the number of casualties reported, because in cases of collision two or more ships are involved in one casualty. Of the 2,012 ships, 1690 are known to have been ships belonging to Great Britain and its dependencies, with British certificates of registry, and 238 to have been Foreign ships. Of the remaining 84 ships the country and employment are unknown. Of the British ships 1198 were employed in the British coasting trade, and 485 were employed in the (over sea) Foreign and Home trade; and of the Foreign ships 11 were employed in the British coasting trade.

Of the total number of casualties (1656) reported in 1865, 354 were collisions, and 1302 were casualties other than collisions. Of these 1302 casualties other than collisions 470 resulted in total losses, and 832 in partial damage more or less serious. The whole number of casualties other than collisions reported in 1864 was 1039, and that number was less than the number reported in any year since 1858; but in 1865 the number, 1302, is in excess of all other years excepting 1863, when the number was 1333.

The annual average for 10 years, including 1865, is for total losses 443, and for partial losses 627; as against this the numbers for 1865 are for total losses 470, and for partial losses 832.

This will be seen from the following short statement :—

CASUALTIES OTHER THAN COLLISIONS.			
Year.	Total Loss.	Partial Damage.	Total.
1856	368	469	837
1857	384	482	866
1858	354	515	869
1859	527	540	1,067
1860	476	605	1,081
1861	513	658	1,171
1862	455	695	1,150
1863	503	830	1,333
1864	386	653	1,039
1865	470	832	1,302
Total -	4,436	6,279	10,715

Average of 10 years, 443 total loss ; 627 partial damage.

Note.—The year 1855 is omitted from this statement as the machinery had not then been sufficiently organized to ensure that all or nearly all the casualties in that year were reported ; and there is reason to believe that some casualties may perhaps not have been reported in the years 1856, 7, and 8.

Of the 470 total losses from causes other than collisions, 245 happened when the wind was at force 9 or upwards (a strong gale), and are chiefly included in the following returns as having been caused by stress of weather, 38 arose from defects in the ship or in her equipments (and of the 38, no less than 30 appear to have foundered from unseaworthiness), 99 appear from the reports made by the officers on the coasts to have been caused by inattention, carelessness, or neglect, and the remainder from various other causes.

Of the 832 partial losses other than by collision, 501 happened when the wind was at force 9 or upwards (a strong gale), and are included as having been caused by stress of weather, 137 arose from carelessness, 48 from defects in the ship or her equipments, and the remainder from various causes.

This is shown in the following short table :

CASUALTIES OTHER THAN COLLISIONS.											
Year.	Total Loss.					Partial Damage.					Total.
	Arising from Stress of Weather.	Arising from Inattention, Carelessness, and Neglect.	Arising from Defects in Ships or Equipments.	Arising from various Causes.	Arising from Causes unknown.	Arising from Stress of Weather.	Arising from Inattention, Carelessness, and Neglect.	Arising from Defects in Ships or Equipments.	Arising from various Causes.	Arising from Causes unknown.	
1859	298	84	42	70	33	308	97	42	88	5	1,067
1860	278	103	49	40	6	367	110	49	72	7	1,081
1861	302	89	48	49	25	424	102	56	75	1	1,171
1862	242	72	25	96	20	386	115	42	144	8	1,150
1863	332	61	31	65	14	550	115	30	126	9	1,333
1864	163	89	39	64	31	299	148	53	144	9	1,039
1865	245	99	38	61	27	501	137	48	129	17	1,302
Total for 7 Years }	1,860	869		601		2,835	1,144		834		8,143

The total number of ships which, according to the facts reported, appear to have foundered or to have been otherwise totally lost on our coasts from unseaworthiness alone in 10 years is 423 ; and the number of casualties caused through unseaworthy ships, unsound gear, &c., and resulting in partial damage, in the same time is 586.

In 1865 there were 98 casualties to smacks and other fishing vessels. Excluding these 98 fishing vessels, it will be seen that the number of vessels employed in the regular carrying trade that have suffered from wreck or casualty during the year, is 1,914. If this number is again sub-divided it will be found that about half of it is represented by the unseaworthy, overladen, or ill-found vessels of the collier class chiefly employed in the coasting trade. For the three years ending 1865 the number is more than half. This will be more readily apparent by the following short table :—

Ships.	No.	No.	No.
	1863.	1864.	1865.
Fishing smacks - - -	— 132	— 74	— 98
Colliers laden - - -	614	523	535
Colliers in ballast - - -	114	99	140
Metallic ores - - -	146	126	150
Stone ores - - -	115	96	109
Ships with other cargoes, and other ships in ballast - }	— 880	— 823	— 980
Total vessels -	2,001	1,741	2,012

From table 4 it will be seen that in the seven years ended 1865 casualties to comparatively new ships bear a very high proportion to the whole number of casualties; that 908 casualties happened to nearly new ships, and 1,701 to ships from three to seven years of age. Then there are casualties to 2,087 ships from seven to 14 years old, and to 3,477 from 15 to 30 years old. Then follow 1,267 old ships from 30 to 50 years old. Having passed the service of half a century we come to the very old ships, viz., 230 between 50 and 60 years old, 102 from 60 to 70, 48 from 70 to 80, 14 from 80 to 90, six from 90 to 100, and four 101 years and upwards. The age of 3,002 are unknown. The state of rottenness and of want of repair of some of the ships above 20 years old often calls for remark. Even at the age of 25 to 30 it sometimes happens that a ship is so rotten as to fall to pieces immediately on touching the ground, without giving the crew the slightest chance of getting out their boats.

Of the 2,012 vessels lost or damaged in 1865, 82 were rigged as ships, 130 were steam ships, 542 schooners, 419 brigs, 187 barques, 187 brigantines, and 196 smacks; the remainder were small vessels rigged in various ways. Of the 2,012 vessels referred to, 902 did not exceed 100 tons burden, 793 were from 100 to 300 tons, 210 were from 300 to 600 tons, and 107 only were above 600 tons burden.

From the table showing the parts of the coasts on which the casualties happened, it will be seen that as usual the greatest number occurred on the East Coast. The numbers are as follow :—

East Coast - - -	-	-	-	868
South Coast - - -	-	-	-	187
West Coast - - -	-	-	-	386
N.W. Coast of Scotland - - -	-	-	-	46
Irish Coast - - -	-	-	-	146
Isle of Man - - -	-	-	-	15
Lundy Island - - -	-	-	-	3
Scilly Isles - - -	-	-	-	5

As regards the loss of life, the returns show that the number lost from shipwreck on or near the coasts of the United Kingdom, from all causes, in 1865 is 698.

This is in excess of the number lost in any year excepting 1859 (the "Royal Charter" year), when the number reached 1,647; and in 1861, when the number reached 884.

The lives lost in 1865 were lost in 164 ships; 124 of them were laden vessels, 33 were vessels in ballast, and in seven cases it is not known whether the vessels were laden or light. 131 of these ships were entirely lost, and 33 sustained partial damage. Of the 698 lives lost the very great number of 275 were lost in vessels that foundered, 53 lives were lost on board vessels in collision, and 335 in vessels stranded or cast ashore.

The remaining number, 35, were lost from various causes, such as by being washed overboard in heavy seas, by explosions, &c.

The number of anchors picked up and delivered into the custody of Receivers of Wreck, during the year 1865, is 815.

From table 23, showing the parts of the coast on which loss of life happened, it will be seen that whilst the greatest number of casualties happened on the east coast of England, the greatest loss of life during the seven years ended 1865 occurred in the Irish Sea. The number of lives lost in the Irish Sea during the seven years is more than double the number lost on any other part of the coasts.

During the past year (1865) the number on the east coast of England (120) is very slightly below the number (125) lost on the coasts of the Irish Channel.

The most fatal winds during the seven years ended 1865 are as follow :—

Direction.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	Total.
N. - - -	42	42	58	65	46	19	61	333
N.N.E. - - -	50	56	42	45	31	26	59	309
N.E. - - -	89	66	94	51	30	56	90	476
E.N.E. - - -	39	53	113	44	29	44	58	380
E. - - -	33	33	101	29	26	81	55	358
E.S.E. - - -	53	52	62	45	27	92	56	387
S.E. - - -	72	76	78	61	50	97	97	531
S.S.E. - - -	40	68	36	43	36	83	60	366
S. - - -	49	73	55	61	47	61	94	440
S.S.W. - - -	92	89	95	139	76	95	133	719
S.W. - - -	166	111	171	194	159	142	192	1,135
W.S.W. - - -	104	69	98	140	147	81	102	741
W. - - -	87	82	69	89	137	92	73	629
W.N.W. - - -	87	128	72	75	209	77	91	739
N.W. - - -	84	104	71	110	214	70	101	754
N.N.W. - - -	50	59	30	62	94	21	59	374
	1,137	1,160	1,245	1,253	1,358	1,137	1,381	8,671

Showing that westerly gales are far more fatal than easterly gales,—the most fatal being from south-west.

It will be seen from table 10, distinguishing the casualties according to the force of the wind at the time at which they happened, that 678 happened when the wind was at force 6 or under, that is to say, when the force of the wind did not exceed a strong breeze, in which the ship could carry single reefs and top gallant sails: that 116 happened with the wind at forces 7 and 8, or a moderate to fresh gale, when a ship, if properly manned and navigated, can keep the sea with safety; and that 810 only happened with the wind at force 9 and upwards, that is to say, from a strong gale to a hurricane.

The numbers for the last seven years are shown in the following short table.

Force of Wind.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	Total.	
0	21	8	10	23	15	21	20	118	Calm.
1	42	23	14	28	28	19	22	176	Light air. Just sufficient to give steerage way.
2	60	47	51	56	39	97	100	450	Light breeze. } With which a ship with all { 1 to 2 knots.
3	33	14	43	43	27	36	24	220	Gentle breeze. } sail set and clean full would { 3 to 4 "
4	93	90	103	110	100	142	146	784	Moderate breeze. } go in smooth water { 5 to 6 "
5	174	151	171	187	174	220	203	1,280	Fresh breeze. } In which she { Royals, &c.
6	180	171	149	195	174	185	163	1,217	Strong breeze. } could just carry { Single reefs & T.G. sails.
7	71	90	66	75	57	35	47	441	Moderate gale. } in chase full { Double reefs and jib, &c.
8	102	137	124	170	195	39	69	836	Fresh gale. } and by { Triple reefs, &c.
9	209	193	230	199	269	221	552	1,873	Strong gale. } Close reefs and courses.
10	182	168	311	218	224	221	120	1,444	Whole gale. { In which she could just bear close-reefed { main topsail and reefed foresail.
11	88	101	102	63	82	30	39	505	Storm. Under storm staysail.
12	87	139	52	69	205	42	99	693	Hurricane. Bare poles.
Variable	7	5	20	6	1	9	2	50	Variable.
Unknown	67	42	48	46	74	73	50	400	Unknown.
	1,416	1,379	1,494	1,488	1,664	1,390	1,656	10,487	

These 1,656 casualties leading to the loss or damage of 2,012 vessels, have thrown a great amount of labour on the Wreck Department of the Board of Trade, and their officers at the out ports, and on the officers and men of the Coast Guard service.

This will readily be understood by the following statement, viz. :

When a wreck or casualty happens on or near the coast, and any persons survive, a Receiver of Wreck obtains from the survivor best able to record the facts, a statement on oath in the form of a deposition, a copy of one of which is appended to these remarks, and is marked 1. See Appendix No. 1.

A copy of another deposition marked 2 is also appended, not as a specimen of a useful deposition, but as one illustrative of an exaggerated and curious case. See Appendix, No. 2.

The number of depositions taken, registered, recorded, and analyzed during the year 1865 was 1,614.

In cases where a deposition cannot be obtained under the terms of the Statute, and also in cases where the Board of Trade require the opinion of a Naval Officer as to the cause of a casualty, a report on the Form marked Wr. 1 is forwarded. Two specimens of returns in this Form are appended, and are marked 3 & 4. The number of these Forms received, registered, recorded, and analyzed in 1865 is 1,429. See Appendix, Nos. 3 and 4.

It will be seen that for each casualty that comes to the knowledge of any officer of the Coast Guard, Customs, or Board of Trade, a report on one or both of the Forms appended, Wr. 1 and Wr. 2, is forwarded for the purposes of the Wreck Register.

It will also be seen, on reference to the casualty return appended, that it is so designed as to give, under properly arranged headings, all the information required by the Wreck Department in compiling the register and statistics, and the accompanying annual returns for Parliament. Nor does the use of these Forms Wr. 1 and Wr. 2 end here. In the cases of the Forms Wr. 2, the statements obtained are of great importance, as they are made whilst the facts are fresh in the minds of the persons examined; and besides being of great value for statistical purposes, are frequently made use of when ulterior proceedings are instituted in courts of law, and are generally referred to by proctors, in order to see that the opponents are not setting up a false case.

The Forms Wr. 1 containing as they do the opinion of an experienced officer, of the cause of the casualty, often form the basis of a correspondence resulting in investigation both as to the loss of a ship and her cargo (as in the case reported in the Return No. 3 appended), as well as to the necessity for, or the improvement in buoys, beacons, and other sea marks; or for the establishment of a life boat, as in the case reported in the Return No. 4 appended.

Besides the work thrown on the department in connection with the casualty reports, there is the work in connection with the protection, custody, and disposal of the wrecked property.

Whenever any ship is stranded or otherwise in distress on the coasts, the nearest Coast Guard officer or Receiver of Wreck is required by the statute to proceed to the spot, and take command of all persons assembled, and to issue such orders as he may think necessary for the protection of the ship and her cargo, and of the lives of the persons on board.

When any wreck is brought or washed ashore, the person bringing it or finding it is required under heavy penalties to deliver it to the nearest Receiver of Wreck or Coast Guard officer on his behalf. He in his turn reports it (on the Form given in Appendix 5) to the Wreck Department, where a Dr. and Cr. account is kept against each piece of wreck. See Appendix, No. 5.

As regards the preservation of wreck and the protection of the interests of the owners, it may be remarked that since the year 1855, when the Board of Trade first undertook the duties in connection with wrecks, casualties, and salvage, it has been found necessary to institute proceedings against no less than 619 persons for infringement of the provisions of the Act as to the delivery of wreck to a Receiver, as to plundering wreck, as to the removal or misappropriation of wreck, and as to dealing in marine stores.

These proceedings have been conducted by the department of the Solicitor to the Customs, with the following results :

SUMMARY OF CASES.

Year.	Number proceeded against.	Convicted.	Acquitted.	Proceedings withdrawn.	Parties absconded.
1855	4	—	4	—	—
1856	74	65	9	—	—
1857	116	98	16	2	—
1858	58	48	6	4	—
1859	31	28	2	1	—
1860	44	34	2	1	7
1861	55	54	1	—	—
1862	51	49	2	—	—
1863	42	29	13	—	—
1864	85	68	17	—	—
1865	59	42	17	—	—
	619	515	89	8	7

The total penalties and costs inflicted in these cases amount to 2,792*l.* 12*s.* 6*d.*

As regards collisions, the number reported in 1865 was 354, of which 114 occurred in the daytime and 240 at night. This is in excess of the number of collisions reported in any year since 1855.

The number of lives lost in collision, 53, is, with one exception, less than the number lost from the same cause in any year since 1858.

The following is a list of the countries and states of which the Governments have adopted the regulations for preventing collisions at sea first agreed to between the Government of this country and the Government of the Emperor of the French.

Country or Place.	Date of Gazette containing Order in Council.	Country or Place.	Date of Gazette containing Order in Council.
Austria	1 May 1863.	Morocco	28 July 1863.
Argentine Republic	15 Sept. 1863.	Netherlands	15 Sept. 1863.
Belgium	1 May 1863.	Norway	15 Sept. 1863.
Brazil	28 July 1863.	Oldenburg	1 May 1863.
Bremen	28 July 1863.	Peru	28 July 1863.
Chili	20 Nov. 1863.	Portugal	1 May 1863.
Denmark Proper	5 Feb. 1864.	Prussia	1 May 1863.
Equador (Republic of the)	28 July 1863.	Roman States	20 Nov. 1863.
France	13 Jan. 1863.	Russia	28 July 1863.
Great Britain	13 Jan. 1863.	Schleswig	5 Feb. 1864.
Greece	6 Feb. 1866.	Spain	28 July 1863.
Hamburg	28 July 1863.	Sweden	28 July 1863.
Hanover	1 May 1863.	Turkey	20 Nov. 1863.
Hawaiian Islands	30 June 1865.	United States, sea-going } Ships	30 Aug. 1864.
Hayti	1 May 1863.	United States, Inland } Waters	2 Dec. 1864.
Italy	1 May 1863.	Uruguay	28 July 1863.
Lubeck	28 July 1863.		
Mecklenburg-Schwerin	1 May 1863.		

For saving life on the coasts of the United Kingdom there were at the end of 1865, 150 life-boats under the management of the Royal National Life-boat Institution, and 42 under other management, making a total of 192 life-boats.

There were also 249 rocket and mortar stations and 553 Coast Guard stations provided with Captain Ward's cork life jackets and life lines. The rocket and mortar apparatus is supported at the expense of the Mercantile Marine Fund, and is worked by the Coast Guard. Captain Ward's life jackets have been paid for jointly by the Admiralty and Board of Trade. During the past year the rocket apparatus has been carefully inspected, the list of stores re-arranged, and the rules for exercise and drill revised. The list of stores for a complete apparatus and the rocket drill are appended to these remarks.

The rockets used on the coasts with the apparatus have hitherto been 9 pounders supplied by Mr. Dennett, of which the following is a representation :—



But during the last year several experiments have been made with a double rocket invented by Colonel Boxer, R.A., of the Royal Laboratory, Woolwich.

A section of one of Colonel Boxer's rockets is as follows :

BOXER'S DOUBLE ROCKET.



These rockets are arranged end on to each other, so that, on the first rocket being expended, the second takes fire and completes the range.

The ranges obtained in the trials of 30 of these rockets at Shoeburyness were as follows :—

	No. of Round.	Nature of Line.	Elevation.	Range, in yards.	Remarks.
6 Pr. Boxer line rocket	1	lbs. 40	30	234	Rockets parted.
	2	40	30	230	
	3	25	30	100	
	4	25	30	270	
	5	25	30	.	Line broke at about 100 yards range.
	6	25	30	236	
	7	20	30	288	Very low ; too low elevation for the size line.
	8	20	25	329	
	9	20	25	286	
	10	40	25	230	
3 Pr. rocket (Boxer line)	11	40	30	171	
	12	40	25	167	
	13	40	27	166	
	14	25	27	204	
	15	25	27	202	
	16	20	27	232	
	17	20	27	185	
	18	15	25	199	
	19	15	25	235	
	20	15	25	249	
1 lb. signal Boxer line rocket	21	15	20	100	
	22	15	20	94	
	23	15	20	112	
	24	25	20	88	
	25	25	23	81	
	26	10	23	96	
	27	10	20	103	
12 Pr. Boxer line rocket	28	10	15	116	There is some doubt about these ranges.
	29	40	35	310	
	30	40	30	360	

In some cases the line went out in large hinks and lumps. The wind was blowing strong, and in opposition to the flight of the rockets.

In the remarks which accompanied last year's wreck register it was stated that endeavours were being made to enrol volunteers to assist the Coast Guard in working the rocket apparatus for saving life from shipwreck.

A mortar apparatus had been placed in charge of Mr. George Young, a farmer at Hubberston Pill or Angle in the Milford District, and by means of this apparatus, and with the assistance of his farm labourers and some fishermen, but without the assistance of the Coast Guard, he succeeded in saving 14 lives from the wreck of the "Sardinia" of St. Andrew's, on the 29th of October last. Endeavours have been made to extend this voluntary system, and those endeavours have been on the whole successful. There are at the present time 71 distinct corps or companies enrolled for working the apparatus as shown in the following table :

List of Life Saving Volunteer Brigades and Companies.

Name of Place.	Whether a Brigade or Company.	Number of Men Inrolled.	Date of Inrolment.	Name of Place.	Whether a Brigade or Company.	Number of Men Inrolled.	Date of Inrolment.
Tynemouth	Brigade	183	Dec. 1864.	Johnshaven	Company	22	1866.
South Shields	"	188	Dec. 1865.	Killybegs	"	7	July 25.
Alnmouth	Company	20	Aug. 8.	Lossiemouth	"	9	July 3.
Amble	"	20	Aug. 8.	Mawgan Porth	"	6	Sept. 6.
Annalong	"	18	July 3.	Milk Cove	"	20	Sept. 6.
Arbroath	"	18	July 25.	Monknash	"	8	June 22.
Ardrossan	"	6	Aug. 8.	Newbiggin	"	83	May 28.
Arklow	"	10	June 7.	New Quay	"	6	April
Ballymacaw	"	20	July 28.	Oliver's Gap	"	12	Sept. 6.
Baltimore	"	11	June 20.	Orford Haven	"	12	Aug. 31.
Banff	"	8	July 25.	Padstow	"	6	July 25.
Blackhalls	"	22	June 12.	Patrington	"	17	Sept. 6.
Boscastle	"	6	Sept. 6.	Port Patrick	"	6	June 12.
Boulmer	"	21	Sept. 13.	Portsoy	"	8	June 18.
Buckie	"	8	July 14.	Port Logan	"	9	Sept. 13.
Bude	"	6	Sept. 6.	Portwinkle	"	12	July 31.
Burghead	"	8	June 27.	Portnoo	"	20	Aug. 31.
Burnmouth	"	18	July 13.	Ramsey	"	17	Aug. 31.
Cahore	"	10	June 7.	Ross Carbery	Brigade	24	June
Carster	"	17	Aug. 31.	Saltfleet	Company	12	March 8.
Castle Townsend	"	3	June 22.	Seaton Carew	"	26	Aug. 31.
Chapel	"	6	Aug. 31.	Sherringham	"	16	Sept. 4.
Courtown	"	10	June 7.	Skegness	"	7	Aug. 10.
Crail	"	50	July 26.	South Dock, Sun-	Brigade	75	Aug. 8.
Craster	"	25	Aug. 20.	derland.	"		Sept.
Crookhaven	"	9	June 20.	Southwold	"	50	Aug. 31.
Cullen	"	8	Aug. 27.	St. Andrew's	Company	50	July 31.
Cullercoats	Brigade	68	June	St. Catherine's	"	11	June 10.
Dymchurch	Company	23	June 12.	Stonehaven	"	20	July 25.
Elie	"	30	July 3.	Trebetherick	"	8	Sept. 6.
Eyemouth	"	25	July 25.	Trevoise Head	"	6	Sept. 6.
Fethard	"	15	July 25.	Ulrome	"	9	Aug. 20.
Filey	"	24	Sept. 13.	Uzon	"	20	July 25.
Five Mile Point	"	1	June 7.	Westhaven	"	12	July 25.
Hartlepool	"	50	June 14.	Wicklow	"	10	June 7.
Jack's Hole	"	10	June 7.	Winterton	"	5	Aug. 31.

See Appendix, No. 8. The rules of the borough of Tynemouth Volunteer Life Brigade, the first brigade in-rolled, was formed through the exertions of Mr. Spence of Chirton village and a few of his friends. The conditions for the inrolment of volunteers, are appended to these remarks.

The following table will show the expenses incurred since 1855 in providing apparatus for saving life. This sum has been paid by the Board of Trade out of the Mercantile Marine Fund.

Year.	No. of Life Boats.	No. of Rocket & Mortar Appa- ratus Stations.	No. of Life Belts in charge of Coast Guard.	Amount paid to the R.N. Life Boat Institution.	Amount paid by Board of Trade for Rewards, &c.	Expenses of Rocket and Mortar Apparatus.	Expenses of Life Belts.	Total Expenses.
				£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1855	127	—	—	1,038 6 8	199 0 0	—	—	1,237 6 8
1856	124	—	—	2,170 18 0	179 9 0	—	—	2,350 7 0
1857	141	198	—	2,073 13 9	195 4 7	2,751 15 11	—	5,020 14 3
1858	149	216	—	2,139 1 1	359 4 6	2,024 17 7	—	4,523 3 2
1859	158	216	—	2,196 6 0	457 3 6	1,943 7 0	—	4,596 16 6
1860	173	233	—	2,486 13 3	918 8 6	2,456 15 8	—	5,861 17 5
1861	179	235	206	2,877 3 2	1,292 1 6	2,145 19 6	100 6 10	6,415 11 0
1862	179	238	434	2,785 13 10	704 7 9	2,130 12 9	109 0 8	5,729 15 0
1863	178	239	792	2,843 6 9	843 14 0	2,931 10 7	106 6 3	6,724 17 7
1864	186	243	1,889	3,001 15 0	770 11 6	3,201 17 8	686 9 10	7,660 14 0
1865	—	—	—	3,429 6 2	1,990 18 11	5,078 0 4	160 8 10	9,758 14 3
				27,042 3 8	7,010 3 9	24,664 17 0	† 1,162 82 5	59,879 16 10

† Note.—A similar amount has been paid by the Admiralty.

And the following table will show the number of lives saved, and the number of lives lost, during the same period :—

Year.	LIVES SAVED.								LIVES LOST.
	By Life Boats.	By Rocket, and Mortar Apparatus, Lines, &c.	By Luggers, and Coast- guard and other Boats.	By Ships and Steam Boats.	By Ships own Boats.	By individual Exertion.	By other means.	Total.	
1855 -	251	399	439	290	—	9	—	1,388	485
1856 -	362	262	1,184	407	—	28	—	2,243	521
1857 -	398	243	512	507	—	8	—	1,668	539
1858 -	206	210	719	394	—	26	—	1,555	353
1859 -	291	260	1,009	766	—	6	—	2,332	1,647
1860 -	326	408	635	769	1,545*	14	—	3,697	537
1861 -	743	447	298	971	1,560	28	577*	4,624	884
1862 -	327	310	407	1,082	1,488	13	412	4,039	690
1863 -	505	357	576	1,500	1,454	13	691	5,096	620
1864 -	306	196	263	1,289	1,379	18	168	3,619	516
1865 -	396	409	323	914	1,768	6	346	4,162	698
	4,111	3,501	6,365	8,889	9,194	169	2,194	34,423	7,490

*Note.—No record kept for former years.

In addition to pecuniary rewards, the following presentations have been made by the British Government during the year 1865 for saving life, viz.:

3 gold medals,	26 telescopes,
6 silver medals,	5 binocular glasses,
7 bronze medals,	6 sextants,
4 gold watches,	and
3 gold chronometers,	3 quadrants.

In the same period the under-mentioned Governments have presented the following rewards to masters of British vessels for saving the lives of Foreigners :—

Government.	Silver Medals.	Bronze Medals.	Gold Watches.	Binocular Glasses.	Telescopes.	Total Number of Rewards given by each Government.
French - -	—	—	—	3	1	4
Italian - -	1	—	—	—	—	1
Netherlands - -	—	2	—	—	—	2
Norwegian - -	2	—	—	—	1	2
Swedish - -	1	—	—	—	—	2
United States -	—	—	9	—	—	9
	4	2	9	3	2	20

During the present year 1866, a new decoration, styled the “Albert Medal,” has been instituted by Her Majesty. A copy of the Warrant is printed in Appendix 9, and the following cut represents the decoration,—



One of these medals has been awarded, and the following is a copy of the case submitted to Her Majesty by this department.

“ Board of Trade.

“ The ‘ Spirit of the Ocean,’ a barque of 557 tons, with a crew of 18 hands and 24 passengers, was wrecked on the rocks, 400 yards to the west of Start Point in the county of Devon, on the 23rd March 1866.

“ The mate and one of the crew were saved by Samuel Popplestone, unaided, and at the imminent risk of his own life.

“ The circumstances under which this very dangerous service was performed by Mr. Popplestone are as follows, viz. :

“ The vessel, with a part of her crew sick, and the mates and passengers assisting in working her, was caught in a strong gale from the south-west; and on Friday the 23rd March she was off the Start in a very dangerous position.

“ Mr. Popplestone observed the peril of the vessel, and knew that if she failed to weather the rocks she must inevitably be lost, and every soul lost with her, unless assistance could be rendered from the shore. He therefore despatched a messenger on one of his own horses to Tor Cross, to rouse the villagers, and another messenger on horseback to give information to the Coast Guard.

“ The vessel had by this time struck on the rocks, and had begun to break up rapidly.

“ Mr. Popplestone took a small coil of rope, and alone and unaided, proceeded over the shore from rock to rock until he got near to the vessel. The wind at this time was blowing at force 11, that is, a storm nearly equal to a hurricane, accompanied by rain, and a very heavy and dangerous sea. Whilst Popplestone was standing on the rock nearest to the vessel, endeavouring to effect a communication with the vessel, he was washed off, but, by a great effort on his part, and by the help of a returning sea, he regained his footing, and from this perilous position he succeeded in saving the lives of two persons, and conveying them beyond the reach of danger.”

Board of Trade,

September 1866.

APPENDIX.

APPENDIX No. I.

Examination on OATH instituted by the RECEIVER of WRECK at the Port of DUBLIN.
In pursuance of the 448th section of the Merchant Shipping Act, 1854, 17 & 18 Vict. c. 104.

1. Names of deponent at full length.

2. State whether deponent is "Master," "Mate," &c. of the ship; the name of the ship, and particulars as to her tonnage and official number.

3. Names and residence of owners.

4. Particulars of rig, build, age, and class of ship.

5. Particulars as to the number of hands composing crew, and of the certificates of the master, mates, and engineers.

6. Particulars of cargo and shippers and consignees.

7. Number of passengers on board.
Note.—If the wife and children of the master or of any officer of the ship are on board, the fact should be stated.

8. Date and state of weather at time of sailing.

9. Any statement as to the condition of hull and cargo of the ship, or of her equipments, &c. at the time of sailing.

10. Limits of intended voyage.

11. Statement as to the voyage previously to the casualty.

12. Particulars of the occasion of distress of the ship, commencing with the date and hour, and the state of the tide, wind, and weather.

13. Statements respecting services rendered, if any.

14. Such other matters or circumstances relating to the ship or cargo on board the same as the receiver or justice thinks necessary.

15. Loss on ship and cargo, and by whom estimated. I cannot say anything on this subject.

16. Particulars of lives lost and saved.

1. William Edward Thomas being duly sworn, deposes as follows; namely,—

2. That he is third officer of the ship "Barbadian," screw steamer, of the port of Liverpool, of the register tonnage of 724 tons, her official number being 13,759.

3. That the said ship was owned by the West Indian and Pacific Steam Ship Company; offices, Dale Street, Liverpool, in the county of Lancaster.

4. That the said ship was rigged as a schooner; that she was built of iron at, he thinks, Hartlepool, in the year 1854, and that she was classed in Lloyd's list as 13 years.

5. That the crew consist of thirty-five hands, including deponent, that the deponent's certificate is a certificate of , and is numbered .

6. That said ship had on board a general cargo, shipped by owners, of Liverpool, and consigned to Company's agents, of Barbadoes.

7. That said ship had on board, in addition to the cargo aforesaid, three passengers.

8. That said ship proceeded from Liverpool on her intended voyage, as named below, on the 5th day of December last past, at 12'30 P.M.; the tide at the time being near high-water; the weather clear, and the wind blowing moderate from the .

9. That at the time of sailing as above, the said ship was fully equipped, well stored, and in good order.

10. That the said ship was bound for Barbadoes, Trinidad, &c. with a small mail.

11. That the said ship proceeded on her said intended voyage, as above stated, in charge of a pilot, John Thomas, No. 11 boat, who left us at the Bell Buoy. The master, Robert Graham, then took charge, set her course, and set the fore and main trysails.

12. That on the 6th day of December, at 5'30 A.M.; the tide at the time being, I cannot say; the weather rather thick and squally, and the wind in the S.W., blowing pretty strong, the said ship struck on what I suppose to be the Blackwater Bank. The master ordered the engines to be reversed at once, but this was of no avail. The ship bumped very heavily, and was expected at every moment to break up. I was ordered by the master to get out and take charge of the starboard quarter boat, after having lowered the same even with the ship's rail. I got out of the boat, and got the ship's chronometer, mails, and a box of jewellery which I knew was in the captain's room. I cast off the boat with thirteen of the crew, myself and one passenger, and made for the Blackwater Light Ship, but not being able to reach it, I put the boat before the wind and sea and ran her up on the beach at Courtown, where all were landed in safety.

13. That being employed below, I observed nothing before the vessel struck, and when I came on deck I saw the Blackwater Light Ship S.W. by W. on the starboard quarter.

14. That when I left the ship by the orders of the captain, other boats were ordered out, the captain and 1st officer remaining on board. I am unable to state the cause of the casualty.

15. That the loss on the said ship is estimated by at pounds sterling, and on the said cargo at pounds sterling, and that the ship was insured in the sum of pounds sterling, and the cargo in pounds sterling.

16. That in consequence of the wreck of the said ship, one life was lost by trying to reach the boat while swinging in the davits, same being a passenger named Volnar. There was another boat in the water with a number of the crew when I left the ship, but what became of her I cannot say. The 2nd officer (T. P. Sherlock, of Cork), with six of the crew, left in the port waist boat and landed at Cahore; one of those was killed by the boat on the beach.

17. That the above contents are in all respects correct and true to the best of deponent's knowledge and belief.

(Signed) WILLIAM EDWARD THOMAS, Deponent.

Sworn at Dublin this 7th day of December 1865, before me,

(Signed) F. W. TREVOR, Receiver of Wreck.

APPENDIX No. 2.

EXAMINATION ON OATH, taken by the RECEIVER of WRECK at the Port of STORNOWAY.

In pursuance of the 448th section of the Merchant Shipping Act, 1854, 17 & 18 Vict. c. 104.

Henry Desmond being duly sworn, deposes :—

That he was seaman of the brigantine "Minnie Harley," of Cork, of 94 tons register, owned by James Harley and others of Cork, and that he sailed from Archangel the 2nd day of October 1858 with a crew of six hands, including himself, bound to Cork, with a cargo of spars, tar, and pitch, shipped by (not known to the Deponent), and consigned to James Harley and others of Cork, the said ship being insured at (not known to Deponent), in the sum of £ , and the Cargo at (not known to Deponent), in the sum of £ .

Left Archangel as above on the 2nd October 1858, with the now deceased Michael Leneghen as master of the said brigantine "Minnie Harley," which proceeded on her voyage, and had favourable breezes until she rounded the North Cape, in about seven days from the time of starting.

After a few more days of fine weather the ship encountered successive gales, driving her almost in every direction by cross currents, she being hove to; the gales continued for 28 or 29 days.

Worked to the southward; damaged sails, which were repaired; shifted top sails more than once; lost latitude; some days thereafter sighted Flamborough Head; put into Middlesborough for provisions and water.

Got provisions, but no water, and set sail again; knocked about in the North Sea for about 35 days, during which the master drank a great deal of salt water, producing nervousness, which, together with the want of success in the voyage, induced him to give up the charge of the ship to the mate, the now deceased Daniel Leary.

The mate himself became exhausted and weary about this time for want of food and water, and took to his berth, after which the ship was managed by me and the rest of the crew.

On the morning of the 25th December the mate died from starvation; and at noon of the 28th following ship hove to near the Butt of the Lewis. The captain in his berth at this time insensible.

A flag of distress hoisted, and Kenneth Murray, Merchant, Port of Ness, of Ness, and the boat's crew came alongside and took myself and the remaining three of the crew ashore from the ship in a very exhausted state, the mate being left dead in the cabin.

The master could not move at this time, but was shortly thereafter taken ashore to Murray's house, where he died on the 29th of December, and was buried in the burying ground at Swanbost, in the Island of Lewis, on the following day. On being brought ashore, I and the rest of the ship's crew were so thirsty that we drank a great quantity of water, and if we had been but a short time longer on board the vessel we would have starved,—the same fate as the captain and mate. I and the rest of the crew were utterly incapable, owing to our exhausted state, to take charge of, or continue on board the ship any longer, as all the provisions and water were finished three weeks previously, and the crew were compelled, in order to save their lives, to kill the ship's dog, which was the last food we partook of on board.

I and the rest of the crew trusted that Murray and his boat's crew would continue by the ship and bring her to safe anchorage, but we were disappointed, and on looking out from the shore next day we could not see anything of her, and I therefore believe that she must have gone down as she was strained and making a good deal of water when we left the vessel.

None of the ship's papers, or the log-book, or any part of the cargo were taken ashore by me or any other of the crew. Every exertion in our power was used for the preservation of the ship and cargo and lives.

The above written contents are in all respects correct and true to the best of my knowledge and belief.

(Signed) HENRY DESMOND, Deponent.

Declared at Stornoway, the 1st day of January 1859, before me,

(Signed) M. B. PITHIE, Receiver of Wreck.

APPENDIX

Coast Guard Division, Arklow.

CASUALTY

Date of Casualty.	PARTICULARS OF SHIP, CREW, CARGO, AND VOYAGE.								
	Name and Age of Ship, and if in Lloyd's List, how classed.	Port of Registry and Official No., if British. Country to which belonging, if Foreign.	How rigged. Whether built of Iron or Wood. Whether Steam or Sailing.	Register Tonnage.	No. of Hands composing Crew, including Master and Mates.	Had Master, Mates, and Engineers Certificates; if so, state Numbers, and whether of Competency or Service.		Whether with Cargo or in Ballast, and if Cargo, Description. If carrying Passengers, state the Number. The Wives and Children of the Master and other Officers of the Ship (if on board) should be included in the Number of Passengers.	Port sailed from. Port bound to.
						Grade.	No. of Certificate.		
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1865. Dec. 6	S.S. Barbadian Age, 9 years. Class, A 1. 9 years.	Liverpool	Schooner. Iron. S.S.	700 Tons	37	Master - Mate - Engineer	Qy. Qy. 6,893	General. Three Passengers.	Liverpool to Barbadoes.

Note.—The information given in Columns 1

QUERIES.

31. The officer forwarding this return should here state shortly his opinion as to the *cause* of the casualty :—
e.g. Error of judgment, stress of weather, bad look-out, not heaving lead, want of seamanship, defective state of lights, buoys, or beacons, drunkenness, &c. &c.
31. Blackwater Light mistook for the Saltees.
Bad look out; gross error of judgment.
(Signed) G.M.B., Insp. O.C.G.
32. If the vessel was driven back, how far had she reached on her intended voyage ?
32. Nil.
33. What were the last lights, buoys, or landmarks seen, and at what hour ? Were they recognized ?
33. Blackwater Light at 5 a.m.
34. Had the vessel a chart on board showing the position of the lights, buoys, &c. near to where she struck, and of the rock or shoal on which she was wrecked ? If not correct, compiler's name and date.
34. Yes.
35. Had the lead been hove, and at what intervals ? What was the depth at the first cast, and at the last cast before striking ?
35. Lead not hove.
36. What course was the ship steering or heading when casualty happened ?
36. W.S.W. Qy. W. by S.
(Signed) G.M.B., Insp. O.G.G.
37. If in charge of a pilot, was he licensed; if so, by whom, and what was the number of his licence ?
37. Nil.
38. What was her draught of water ?
38. Nineteen feet.
39. If the casualty was caused by collision, were lights shown and fog signals made in accordance with the Admiralty regulations ?
39. Nil.
40. Was she fully manned, and well found in rigging, sails, anchors, cables, &c. ? If not, in what was she deficient ?
40. Yes.

* The Royal Commissioners recommended harbours of refuge at the following places; viz., Wick,

Approved by me, this 8th day of December 1865.

(Signed) G. M. BALFOUR,
Inspecting Officer of Coast Guard.

Remarks by the Inspecting Officer of Coast Guard or Officer who witnessed the Casualty, or otherwise.—In the vessel struck at 4.30 a.m. instead of 5.30 a.m. He believes that the Chief Officer had the middle watch, as he probability that he fell overboard.

The mails saved.

One passenger fell overboard and was drowned, and the captain and 20 hands are still missing. One man was The Inspecting Officer of Coast Guard cannot but respectfully remark, that from the knowledge he has gained of unfit for their duties, and when they come to the helm hardly know N. from S.

Approved by me, this 8th day of December 1865.

(Signed) G. M. BALFOUR,
Inspecting Officer of Coast Guard.

No. 3.

Receiver's District, Wexford.

RETURN.

Date and state of Weather.				Exact Spot where Casualty happened, and if on or near the Coast the Name of County in or nearest to which situate.	Precise Nature of Casualty : <i>e.g.</i> <i>Collision, Stranded, Foundered, Loss of Spars.</i>	Whether occasioning Total or Partial Loss, and if Insured, Amount of Insurance.						Lives Lost and Saved.			
At Time of Sailing.						Ship.			Cargo.			No. of Lives Lost.	No. of Lives rescued, and by what Means.	No. of Persons on board in no danger. If they left the Ship, state how.	
Date and Hour.	State of Tide.	State of Weather.	Direction and Force of Wind.			If a Total Loss, here state Value of Ship, if known.	If a Partial Loss, here state estimated Loss on Ship.	Amount Ship Insured for	If a Total Loss, here state the Value of Cargo, if known.	If a Partial Loss, here state estimated Loss on Cargo.	Amount Cargo Insured for.				
11.	12.	13.	14.	19.	20.	21.	22.	23.	24.	25.	26.	28.	29.	30.	
6.30 5th	1/2 Flood.	Mode- rate.	4	Blackwater Bank, Wexford.	Stranded -										
At Time of Casualty.															
Date and Hour.	State of Tide.	State of Weather.	Direction and Force of Wind.												
15.	16.	17.	18.												
5.30a.m. 6th	1/2 Ebb.	Strong gales, & thick.	9												
						Total loss. Value not known.									
						Not known.									
						If Salvage services rendered, state by whom ; <i>e.g.</i> Coast Guard, fishermen, beachmen, &c. &c.									
						27.									
						No Salvage Service rendered to the Vessel or Crew.									
												Sup- posed 21	21. Own boats.	All in danger.	

to 30 should be stated as briefly as possible.

QUERIES.

41. Is there reason to suspect defective construction, or imperfect repairs? If so, give particulars. 41. Nil.
42. Had she a deck load, or was she overladen? 42. Nil.
43. *Is the cargo discharged or to be discharged in consequence of the casualty.* 43. Ship sunk. Broken up.
44. Was the binnacle compass in good order? If two, how far apart? 44. Yes.
45. Had the deviation of the compass due to the vessel's local attraction been ascertained? Had the cargo been changed since? Were any masses of iron on board? 45. Yes.
46. Had she boats enough to carry crew and passengers? 46. Yes.
47. Were they of use in this case? If not, why not? 47. Yes. The funnel fell on one. A life boat.
(Signed) G.M.B., Insp. O.C.G.
48. Was every exertion made by the crew to save the vessel and passengers? 48. Yes.
49. *Might the casualty or loss of life have been avoided? If by a life-boat, mortar or rocket apparatus, light-house, buoy, or beacon, by which, and where should it have been placed to have had that effect?* 49. Nothing could save her by the course she was steering.
50. Might it have been avoided by one of the harbours of refuge recommended by the Royal Commissioners; and if so, by which? * 50. Nil.
51. Are there sufficient means in the neighbourhood for saving life? And were they used on this occasion? If so, with what result? If not used, why not? If not sufficient, what is required? 51. Yes.
52. State name of master, and name and address of owner. 52. Graham, Master. West Indian and Pacific S.P.Co. Leech, Harrison, & Forwood, Liverpool.

Peterhead, Tyre, Hartlepool, Filey, St. Ives, Padstow, Carlingford, Waterford, Isle of Man.

Dated at Cahore, this 7th day of December 1865,

(Signed) RICHARD FLYNN,
Chief Boatman in Charge.

forwarding the accompanying form the Inspecting Officer of Coast Guard begs to observe, that he is of opinion that has not been able to ascertain that he was seen by any one on board since the time of the accident. There is just a

drowned when the boat touched near Cahore Point, County Wexford, with the 2nd officer and six men.
the different wrecks, he is led to believe that at the very least the greater part of many crews leaving Liverpool are
Dated at Cahore, this 7th day of December 1865.

(Signed) R. FLYNN,
Chief Boatman in Charge.

APPENDIX

Coast Guard Division, Isle of Man.

CASUALTY

Date of Casualty.	PARTICULARS OF SHIP, CREW, CARGO, AND VOYAGE.								
	Name and Age of Ship, and if in Lloyd's List, how classed.	Port of Registry and Official No. if British. Country to which belonging, if Foreign.	How rigged. Whether built of Iron or Wood. Whether Steam or Sailing.	Register Tonnage.	No. of Hands composing Crew, including Master and Mates.	Had Master, Mates, and Engineers Certificates; if so, state Numbers, and whether of Competency or Service.		Whether with Cargo or in Ballast, and if Cargo, description. If carrying Passengers state the number. The Wives and Children of the Master and other Officers of the Ship (if on board) should be included in the Number of Passengers.	Port sailed from. Port bound to.
						Grade.	No. of Certificate.		
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1865. Nov. 21	Gelert - - - Age, not known. Class, not classed. years.	Caernarvon - - 13,928	Smack. Wood.	37	3	Master - Mate - Engineer	Not " " " "	Cargo, slates - -	Bangor to Portrush.

Note.—The information given in Columns 1

QUERIES.

31. The Officer forwarding this Return should here state shortly his opinion as to the *cause* of the casualty :—
e.g. Error of judgment, stress of weather, bad look-out, not heaving lead, want of seamanship, defective state of lights, buoys, or beacons, drunkenness, &c. &c.

31. Stress of weather ; dragged her anchors, and drove on the St. Marys or Conister Rock off Douglas Harbour.
32. If the vessel was driven back, how far had she reached on her intended voyage ?

32. No.
33. What were the last lights, buoys, or landmarks seen, and at what hour ? Were they recognized ?

33. In Douglas Bay ; all recognized.
34. Had the vessel a chart on board showing the position of the lights, buoys, &c. near to where she struck, and of the rock or shoal on which she was wrecked ? If not correct, compiler's name and date.

34. Yes.
35. Had the lead been hove, and at what intervals ? What was the depth at the first cast, and at the last cast before striking ?

35. Lead occasionally hove.
36. What course was the ship steering or heading when casualty happened ?

36. West.
37. If in charge of a pilot, was he licensed ; if so, by whom, and what was the number of his licence ?

37. Pilot on board, but not licensed.
38. What was her draught of water ?

38. Ten feet.
39. If the casualty was caused by collision, were lights shown and fog signals made in accordance with the Admiralty regulations ?

39. Not apply.
40. Was she fully manned, and well found in rigging, sails, anchors, cables, &c. ? If not, in what was she deficient ?

40. Fully manned and well found.

* The Royal Commissioners recommended harbours of refuge at the following places ; viz., Wick,
Approved by me, this 23rd day of November 1865.
(Signed) FENTON WAKE,
Inspecting Chief Officer.

Remarks by the Inspecting Officer of Coast Guard or Officer who witnessed the Casualty, or otherwise.—The are seven, viz.—

- " Robert," flat, saved by Coast Guard boat, 1862.
- " Eclipse," schooner, two hands saved, three lost, 1862.
- " Attila," barque, saved by harbour boat, 1863.
- " Swallow," smack, saved by hovellers, April 1864.

Since wreck of " Gelert," great efforts are being made to collect funds for a life boat at Douglas, and the local The Inspecting Officer of the Isle of Man is of opinion that it *would be* desirable to place a rocket apparatus at addition to the boat, and it is close to the station.

No. 4.

Receiver's District _____.

RETURN.

Date and State of Weather.				Exact Spot where Casualty happened, and if on or near the Coast the name of County in or nearest to which situated.	Precise Nature of Casualty: <i>e.g. Collision, Stranded, Foundered, Loss of Spars.</i>	Whether occasioning Total or Partial Loss, and if Insured, amount of Insurance.						Lives Lost and Saved.		
At Time of Sailing.						Ship.			Cargo.			No. of Lives Lost.	No. of Lives rescued, and by what Means.	No. of Persons on board in no danger. If they left the Ship, state how.
Date and Hour.	State of Tide.	State of Weather.	Direction and Force of Wind.			If a Total Loss, here state Value of Ship, if known.	If a Partial Loss, here state estimated Loss on Ship.	Amount Ship insured for.	If a Total Loss, here state the Value of Cargo, if known.	If a Partial Loss, here state estimated Loss on Cargo.	Amount Cargo Insured for.			
11.	12.	13.	14.	19.	20.	21.	22.	23.	24.	25.	26.	28.	29.	30.
20 Nov. 11 A.M.	Flood.	Fine.	South 5	St. Mary's or Conister rock, Douglas, Isle of Man.	Dragged her anchors.	Total Loss, 260£.	—	£ 260	Doubtful.	Not known.		Nil.	3 by Coast Guard boat.	Nil.
At Time of Casualty.														
Date and Hour.	State of Tide.	State of Weather.	Direction and Force of Wind.											
15.	16.	17.	18.											
Nov. 21 7 P.M.	1 Quatr. Flood.	Clear.	S.W. 7											
If Salvage services rendered, state by whom: <i>e.g. Coast Guard, fishermen, beachmen, &c. &c.</i> 27.														
In the Coast Guard boat, by which the lives were saved, were three Coast Guard men and three beachmen.														

to 30 should be stated as briefly as possible.

QUERIES.

- | | |
|--|---|
| 41. Is there reason to suspect defective construction, or imperfect repairs? If so, give particulars. | 41. No. |
| 42. Had she a deck load, or was she overladen? | 42. No. |
| 43. <i>Is the cargo discharged or to be discharged in consequence of the casualty?</i> | 43. Not apply. |
| 44. Was the binnacle compass in good order? If two, how far apart? | 44. Yes. |
| 45. Had the deviation of the compass due to the vessel's local attraction been ascertained? Had the cargo been changed since? Were any masses of iron on board? | 45. |
| 46. Had she boats enough to carry crew and passengers? | 46. Yes. |
| 47. Were they of use in this case? If not, why not? | 47. Not able to use her. |
| 48. Was every exertion made by the crew to save the vessel and passengers? | 48. Yes. |
| 49. <i>Might the casualty or loss of life have been avoided? If by a life boat, mortar or rocket apparatus, lighthouse, buoy, or beacon, by which, and where should it have been placed to have had that effect?</i> | 49. No. |
| 50. Might it have been avoided by one of the harbours of refuge recommended by the Royal Commissioners; and if so, by which? * | 50. No. |
| 51. Are there sufficient means in the neighbourhood for saving life? And were they used on this occasion? If so, with what result? If not used, why not? If not sufficient, what is required? | 51. Life boat required. |
| 52. State name of master, and name and address of owner. | 52. Edward Owens, Master; James Owens, Owner, Bangor. |

Peterhead, Tyne, Hartlepool, Filey, St. Ives, Padstow, Carlingford, Waterford, Isle of Man.

Dated at Douglas, this 23rd day of November 1865.

(Signed) FENTON WAKE,
Inspecting Chief Officer.

number of wrecks which have taken place during the last three years at which a life boat would have been of service

"Jane and Agnes," schooner, November 1864.

"Alabama," trawl boat, saved by hovellers, November 1864.

"Gelert," smack, saved by Coast Guard, 21st November 1865.

subscriptions have already reached 200£.

Douglas. The Coast Guard boat house at Douglas is quite large enough to contain the life apparatus and cart, in

(Signed) FENTON WAKE,
Inspecting Chief Officer,

APPENDIX

Specimen of Entries in Register of

1865.

A.B.

District.

Receiver's Reference Nos. for the Current Year.	Reference Nos. of Wrecks reported in previous Years.	Date when taken into Receiver's Custody.	Description of Article. — Name, Official No., and Port of Registry of Ship to which belonging.	Where found. — If claimed by Lord of Manor, state Name.	Name and Address of Owners of Article.	Names of Salvors.	Estimated Value.	Advances made in previous Years.	Repayment of Advances this Year.	Deposits received in previous Years.	Deposits repaid this Year.	If sold, gross Proceeds of Sale, less Fees.
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
-	47/64	Jan. 10	1 log of pine - -	On the Manor of Holderness.	—	T. Brown -	£ 2 0	s. d. 6 4	s. d. 6 4	-	-	£ 2 1 9
-	304/	Mar. 10	Rudder stern post and part of false keel. "Ocean" of Grimsby, Official No. 73,286.	On the East Winner.	Messrs. Stevens, Grimsby.	E. Fussels and others.	Unknown	3 0	3 0	-	-	0 19 0
-	704/	June 24	1 anchor and chain, (no marks).	In the Downs	—	Jas. Porter -	5 10	-	-	-	-	5 1 4
24	—	Jan. 4	1 bale of cotton, 4cwt., 3 qrs. 24 lbs.	Afloat near Hornsea.	—	J. McKenzie -	20 0	-	-	-	-	—
764	—	May 28	1 pleasure boat, (not named).	On the beach at Arbroath	—	T. Stewart -	4 0	-	-	-	-	2 7 6
-	573/64	—	1 cask of paraffin oil	Between high and low water at Hunstanton.	—	T. Graham -	3 0	-	-	-	-	—
1146	—	Oct. 24	Prussian Barque, "Wilhelm," with cargo of zinc ore.	Derelict -	H. Heindrick and Co. of Memel.	O. Palmer and others.	1,987 0	-	-	-	-	—
1438	—	Nov. 12	The Ship "Industry" of Greenock. Official No. 51,746, with cargo of salt.	Off Cape Finisterre.	P. Ritchie and Co., Greenock.	Owners and Crew of the "Thomas" of Penzance.	20,000 0	-	-	-	-	—
1745	—	" 16	Gratuity to Coast Guard for services rendered to "Twin Brothers."					25 0	-	-	-	—
-	131/64	Feb. 23	Smack "Wanderer" of Hull.	—	T. Smith, Brothers, Hull.	Thos. Jackson and others.	500 0	-	-	250	250	—
2176	—	Dec. 12	Brig "Victory" of Milford. Official No. 26,743.	Dovercourt Beach.	Wm. Prescott, Dover.	Henry Bacon	250 0	-	-	-	-	115 8 0
2433	—	" 21	Ship "Zepher" of Sweden, with cargo of wood and iron.	Longsand -	Hans Andersen, Stockholm.	John Tye, Harwich.	1,500 0	-	-	-	-	—

No. 5.

Page in Register 301.

Wreck delivered into the Custody of a Receiver.

C.D.

Receiver.

1865.

Fees.	Charges on the Wreck.			Repayment of Charges and Fees on Delivery of Wreck.	Deposits to meet Salvage Claims.		Net proceeds of Wreck paid to		Balance in the hands of the Board of Trade.	Advances made this Year on Wrecks not sold.	Charges not recovered.	Payments on Wrecks, proceeds of which were received in previous Years.	REMARKS.
	Travelling and incidental Expenses and Customs Duties.	Salvage.	Total Charges exclusive of Fees.		Sums received.	Sums paid.	Owners.	Lords of Manors.					
14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	
£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s.	£	£ s. d.	£ s. d.	s. d.	£ s. d.	£ s. d.	s. d.	£ s. d.	
0 2 3	—	1 3 6	1 3 6	—	—	—	—	11 11	—	—	—	—	Proceeds paid to Lord of the Manor of Holderness. 31/3/65.
0 1 0	0 2 0	0 6 0	0 8 0	—	—	—	0 8 0	—	—	—	—	—	Proceeds paid to Owners. 30/6/65.
0 5 4	0 14 6	1 18 11	2 13 5	—	—	—	—	—	2 7 11	—	—	—	Proceeds held by Board of Trade.
—	2 3 7	—	2 3 7	—	—	—	—	—	—	2 3 7	—	—	Wreck still in hand. Expenses advanced by Board of Trade.
0 2 6	2 4 6	0 7 4	2 11 10	—	—	—	—	—	—	—	4 4	—	Loss to Board of Trade amounting to 4s. 4d.
—	—	—	—	—	—	—	1 3 6	—	—	—	—	1 3 6	Paid to Owners on account of Wreck sold in a former year. 30/6/65.
5 10 0	2 5 0	1,000 0 0	1,002 5 0	1,007 15	—	—	—	—	—	—	—	—	Property given to Owners on payment of Salvage and Expenses. 31/12/65.
20 10 0	37 12 6	785 0 0	822 12 6	—	1050	227 7 6	—	—	—	—	—	—	Property on Salvage being deposited with Receiver. 31/12/65.
—	—	25 0 0	25 0 0	25 0	—	—	—	—	—	—	—	—	In this case a gratuity is paid to Coast Guard for protecting Wreck whilst in the Custody of the master. 31/12/65.
—	4 7 6	200 0 0	204 7 6	—	—	45 12 6	—	—	—	—	—	—	Payment of Salvage out of deposit, and return of balance to Owner. 31/12/65.
6 12 0	6 14 0	57 0 8	63 14 8	—	—	51 13 4	—	—	—	—	—	—	Wreck sold by Receiver, and net proceeds paid to Owner after payment of Salvage, &c. 31/12/65.
2 14 0	—	Settled by Bond.	—	2 14	—	—	—	—	—	—	—	—	In this case the Ship was given up to the Owner on giving bond for Salvage, and on payment of Fees. 31/12/65.

APPENDIX No. 6.

ROCKET AND MORTAR APPARATUS.

LIST OF STORES.

ROCKETS.

Machines, rocket, complete, i.e., rocket stands	-	1.
Rockets, life saving, Boxer's	-	18 for each station.
Rockets, signal, red and white	-	-
Sticks, rocket	-	1 required for each rocket.
Pins, iron, rocket	-	1 per rocket, and 20 per cent. spare.
Washers { India rubber	-	2 per rocket.
{ metal	-	1 per rocket.
Fuzes, rocket	-	1 per rocket, and 20 per cent. spare.
Tubes, detonating	-	2 to each rocket.

MORTARS.

Mortars, 5½ inch, complete.
Bed for ditto.

Shot, looped with thongs { round { 6-pr. } fuzes are not used with these shot.
 { 24-pr. }
 { oblong 24-pr., fitted for fuzes.

Fuzes, shot, life saving - - - - - 4 fuzes for each shot, and 20 per cent. spare.
Tubes, friction, copper - - - - - 1 tube for each round, and 20 per cent. spare.
Powder, L.G., lbs. - - - - - as required.

LIGHTS.

Lights, long, life saving.*
Handles for ditto.†
Primers, detonating, ditto.‡
Portfires, life saving.*
Handles for ditto.†
Primers for ditto.‡

* Should be asked for in such numbers as may be required. If a first supply they should be demanded in a box either large or small, a large box contains 12 portfires and 10 lights, a small box 6 of each. If not a first supply it should be so stated.

† Should be asked for as required, say one for every six lights or portfires; but as they are not expended, may not always be required. The handles are different in pattern.

‡ Primers, one per light or portfire, and 20 per cent. spare.

The following gear is provided in addition to the stores enumerated above; namely,

- (a.) A suitable *cart* or *waggon* in which the apparatus can be carried to a wreck. This should be supplied with springs and good side lamps, and should be sufficiently large to contain the whole of the apparatus and gear. The wheels should be made with broad or narrow tires to suit the character of the coast on which it may be worked. Each cart or waggon should carry drag ropes and fittings, similar to those used with guns in field batteries, so that it can either be dragged by men or horses as circumstances may require. A box to contain small stores, such as a hammer, nails, grease, spun yarn, &c., should be fitted to the side of the cart or waggon before the wheel, and a vehicle intended for the conveyance of a rocket apparatus should also have fitted in the rear of it a water-tight compartment to carry a supply of rockets. Carts and waggons should be painted at least once in three years; and the gear should, as directed in paragraph 201 of the Instructions, be examined, and, if necessary, repaired every quarter. The painting should be done in the month of July. Tenders for painting the carts should be sent to the Board of Trade for approval, with the annual Report referred to in paragraph 201 of the Instructions, not later than the 30th June. The carts to be painted as follows; viz., the body, prussian blue, with "B of T" in yellow letters on the front, and the wheels and shafts vermillion.
- (b.) Two or three *rocket lines* laid up loose. One end of the rocket line is to be attached to, and launched with the shot or rocket.
- (c.) *Boxes* fitted with faking pins, in which to stow the rocket lines. See engraving.
- (d.) A *Hawser* of 3-inch Manilla right-handed rope, from 40 to 120 fathoms, according to the steepness or flatness of the shore.
- (e.) A *Whip* of Manilla line, not exceeding 1½-inch, rove through a single tailed block. The "Whip" to be made of left-handed rope the reverse of the hawser, and to be twice as long as the hawser, and the tail of the block to be at least two fathoms in length. The ends of the "Whip" to be spliced together, so as to convert it into an endless rope.
- (f.) A *Sling Life Buoy*, with petticoat breeches, in which to place the person to be rescued, and haul him ashore.

- (g.) A *Traveller*, or inverted block with a brass sheave, to be attached to the *sling*, and carry it along the *Hawser*.
- (h.) A *Double Block Tackle purchase* for setting taut the hawser, one of the blocks being fitted with two tails to bend on to the hawser, or with luff tackles fitted to put on to the hawser with strop and toggle (like a top-gallant or royal purchase).
- (i.) Three small *spars* to form a triangle over which the hawser, may be passed, and thereby raised higher above the water. This will be found convenient on parts of the coast where the shore is flat.
The triangle should be fitted with a swivel snatch block instead of standing hooks, the strapping of the block to be of good iron.
- Note.—The sheaves of all blocks are to be made of brass instead of lignum vitæ, and a spare block of each kind is to be demanded for each apparatus, and kept in store.*
- (k.) An *Anchor* with one fluke, to be buried in the earth, sand, or shingle, to which to set up the hawser by means of the tackle purchase. In some places where the shore is composed of soft shingle or sand, and where an anchor will not hold, a stout plank five or six feet long to be used as a backer to the anchor, with or without a fathom of chain of sufficient strength fastened round it amidships. The plank being buried three or four feet beneath the ground may be substituted for the anchor, and the end of the chain, with a ring attached, led to the surface, the hawser may be set up to it by the tackle purchase in the same manner as to an anchor.
- (l.) A *Red Flag* two feet by three feet, fixed at the end of a staff five feet long, and a *Lantern* with a red lens fixed in it, to be used as signals in the manner directed below.
- (m.) Two or three *spades* or *shovels*, and a *pickaxe*, to be of good quality and suitable for the work, a *Salvagee strop*, and a few pieces of *extra rope*, to be used as occasion may require.
- (n.) A light *hand-barrow* for carrying portions of the apparatus from the cart to the place where it is to be used.
- (o.) Three sets of *tally boards*, each set consisting of two boards of hard wood about nine inches long by five inches wide and $\frac{3}{4}$ inch thick. These boards to have the following words painted on them in white letters on a black ground.—English on one side and French the other; viz.—

No. 1. Tally board to be attached to the whip.

English—

“Make the tail of the block fast to the lower mast well up. If masts are gone, then to the best place you can find. Cast off rocket line, see that the rope in the block runs free, and show signal to the shore.”

French—

“Fouettez la poulie le plus haut possible sur le bas mât ou à l’endroit le plus favorable si les bas mâts sont perdus. Détachez la ligne, voyez que la corde coure facilement dans la poulie, et faites signal au rivage.”

No. 2. Tally board to be attached to the hawser.

English—

“Make this hawser fast about two feet above the tail block. See all clear and that the rope in the block runs free, and show signal to the shore.”

French—

“Amarrez cette aussière à deux ’pieds environ au dessus de la poulie. Voyez que rien n’engage et que la corde coure facilement dans la poulie, puis faites signal au rivage.”

Note.—A set of the tally boards should be kept attached to the hawser and whip in the cart ready for use.

- (p.) *Long Lights*, one box of Colonel Boxer’s, to be used as occasion may require.
- (q.) *Signal Rockets*, eighteen, throwing white and red stars.
- (r.) Two *heaving sticks* and *lines* to be used as occasion may require.
- (s.) A *water barrico* with a large square hinge bung large enough to admit a man’s hand.
- (t.) A *hawser cutter* for the purpose of severing the hawser from a wreck.
- (u.) A *tarpaulin* to cover over the apparatus and stores in the cart when the apparatus is not in use, and fitted with becketts and tent pegs, to secure it on the beach or shore for coiling the whip on when the apparatus is in use.
- (v.) *Life Belts*. Two of Captain Ward’s, and two *Life Lines*.

The whole of the gear and a sufficient supply of rockets, &c. are to be kept in the rocket apparatus cart in good order, dry, and ready for immediate use.

APPENDIX No. 7.

ROCKET AND MORTAR APPARATUS.

DRILL.

On a wreck occurring, the watchman will call the officer and men, and send for the horses.

SIGNALS.

Day.

Assemble at station *two $\frac{1}{2}$ min. guns, ball over ensign at mast-head.
 Proceed to left† *two $\frac{1}{2}$ min. ball and flag over ensign at mast-head.
 Proceed to right† *two $\frac{1}{2}$ min. ball and flag under ensign at mast-head.

Night.

Assemble at station *two $\frac{1}{2}$ min. guns and white light at mast-head.
 Proceed to left *two $\frac{1}{2}$ min. guns and red light at mast-head.
 Proceed to right *two $\frac{1}{2}$ min. guns and white and red lights at mast head.

* If there are no guns at the station, one or more rockets with coloured stars, fired at intervals of a minute, and at an elevation which will ensure their bursting in sight of the surrounding neighbourhood, to be the alarm by night.

† N.B.—The right or left of station to be determined by a previous knowledge of its position, and looking to seaward at the watch house.

Night patrols to carry white cap covers, with Nos. in large black figures, 1 to 6, painted on them, and easily distinguishable at night-time, in readiness for putting on for wreck duty.

On a sufficient number of men being assembled, the cart to be taken to the vicinity of the wreck; drag ropes to be used until the horses arrive. The officer to fill up rocket Nos. on the way, if any of the permanent Nos. are absent, otherwise the Nos. as on journal of station.

If the wreck occurs at a considerable distance from the station and horses are used, No. 5 attends at the cart; the rest of the Nos. as directed by the officer.

All Coast Guard parties to be accoutred as night patrols, so that in the event of being required to guard wrecked property they will be prepared to do so.

On a flat shore, or in the event of wreck breaking up, it may be advisable to use whip and sling life-buoy without the hawser.

CAUTION.—Great attention should be paid to the surging of the wrecked vessel, so as to veer and haul on the purchase of the hawser, and prevent it from snapping or stranding.

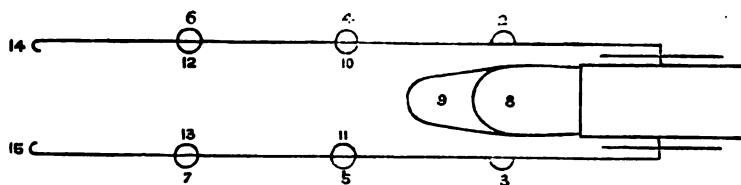
ROCKET DRILL.

Words of command.

“Rocket Party fall in,” “Form the Order of March” (or Double), “Halt,” “Action,” “Ready,” “Fire,” “Haul out,” “Haul Ashore.”

“Rocket Party fall in.”

	2	4	6	8	10	12	14	Rear Rank.
1	3	5	7	9	11	13	15	Front Rank.
	Rocket Nos., . 1 . 2 . 3 . 4 . 5 . 6.							
Auxiliaries,	7	8	9	10	11	12	13	14 . 15.

“Form the Order of March.”

PROVIDING STORES.

No. 1. Rocket frame, tube box (containing tubes, primers, washers, pins for rockets), priming wire, pendulum, and trigger line.

2. Six rockets, box of hand lights and port-fires, 6 staves, 2 life belts, line, and box with small stores (to be attached to side of cart before wheel).

3. Rocket line, whip and tallies, water barrico, 2 tail blocks (one on whip and one spare), and hawser cutter.

4. Straps, signal flag, and lanthorn, tarpaulin, and 8 tent pegs. N.B.—Tarpaulin to be fitted for pegging down on the beach.

5. Hawser and tallies, snatch block, traveller, breeches buoy, triangle.

6. Anchor, backer, luff tackle, pickaxe and spades.

The Officer to provide a flask of spirits to revive stranded crew if necessary.

N.B.—The stores are always to be kept in the cart in a serviceable state.

A list of the stores to be printed on calico to be fixed on a board, and screwed on to the rear of the cart.

The stores to be examined after use, and put in order. To be mustered and aired monthly.

All auxiliaries are to assist in carrying stores from cart to point of action.

DUTIES AT THE ORDER "*Halt*," "*Action*."

No. 1 places rocket frame—uncaps and places rocket in frame—points—elevates (making due allowance for force and direction of wind)—primes—sees all clear—fires—removes frame to cart—mans hauling part of whip.

2 assists No. 3 to place box with line 6 yards to leeward and abreast of frame—lifts box clear of pins—places and pins staff to rocket and hands it No. 1—attends steadying line of frame if required, and then takes charge of right side of whip.

3 takes out water barrico and rocket staves, and assisted by No. 2 places box with line 6 yards to leeward and abreast of frame. Lifts box clear of pins and cants it in the direction of the wreck. Wets about 3 fathoms of end of line, and reeves it through staff, and puts on two india-rubber and a metal washer, and then knots end of line securely.

4, assisted by even Nos. of auxiliaries, takes the whip and carries it 8 yards to the right rear of frame, and sees it clear for running. Bends on hawser and tally about 2 fathoms from the end, and takes charge of left side of whip.

5, assisted by all the odd Nos. of auxiliaries takes end of hawser and tally to No. 4, and clears it away for hauling off to the wreck,—clove hitches whip to traveller—bends on breeches buoy—takes charge of cart.

6, assisted by odd Nos. of auxiliaries, buries anchor and backer—hooks on luff to anchor and secures it to hawser—raises triangle and snatches hawser.

Auxiliaries.—7, assisted by 8, spreads and pegs down tarpaulin, then attends signals under direction of officer. NOTE.—If there is no 7, officer attends signals.

8 assists 7—takes charge of life belts from No. 2; keeps ground clear, and attends to stranded crew when landed.

9, 11, 13, 15, assist No. 5 to clear away hawser, keeping a slight strain on it while being hauled off to wreck, keeping to the left of the whip; assist No. 6 to bury anchor and backer, &c., and then man fall of luff and veer and haul as necessary.

10, 12, 14, assist No. 4 in working the whip, hauling off hawser, &c.

NOTE.—In working the apparatus with only six men, 3 and 5 assist No. 6 to raise triangle and attend hawser. 1, 2, and 4 attend and work the whip.

"*Ready*."

No. 1 sees trigger line clear and cocks the lock, or lights portfire, retiring to the left.

2 attends steadying line.

"*Fire*."

1 fires with a steady pull, or with the portfire, and, if communication is effected, removes the frame.

NOTE.—If rocket fails, 3 and 4 haul in line—1 and 2 fake down clear for running—1 corrects the pointing and elevation, and then the party proceed as before.

"*Haul out*."

1, 2, 3, assisted by even Nos. of auxiliaries, haul out hawser and breeches buoy.

"*Haul ashore*."

1, 3, 4, assisted by even Nos. of auxiliaries, man the hauling side of whip—2 attends veering part, assisted, if necessary, by an auxiliary No. As people are landed, No. 8 and any spare Nos. attend to them.

As there are so many men-of-war's men present, it may be found very useful to use the boatswain's pipe in working the apparatus. Many stations have a boatswain's mate among the crew.

In case of an emergency the above can be performed with 6 Nos., or it can be expanded to any No. required; but it will be found preferable to form all Nos. above 15 into a separate crew to relieve the working crew, or use them to guard the ground, or work a separate apparatus as circumstances may require.

When the service or exercise is over, the stores are to be returned to the cart, and the party to fall in to the order of march, and return to the station.

APPENDIX No. 8.

RULES OF THE BOROUGH OF TYNEMOUTH VOLUNTEER LIFE BRIGADE.

1. That this corps be called the "Tynemouth Volunteer Life Brigade," and its object is to assist the Coast Guard in saving life in cases of shipwreck.

2. That this corps consist of enrolled members (effective and non-effective), and honorary members; the latter contributing to the funds of the corps, but not enrolled for service.

3. That the affairs of the corps be managed by a secretary, treasurer, and committee of twelve effective members, to be elected annually by the enrolled members of the corps. The chief officer of the Coast Guard to be a member of the committee *ex officio*.

4. The members who are passed as effective by the district commanding officer shall elect annually the company officers in the proportion of two to each fifty men.

5. Candidates for admission to the corps must be nominated by two members, and admitted or rejected by a majority of the committee present at its next meeting.

6. That the committee meet monthly for the transaction of business, and that five of their number be a quorum.

7. That all officers of the corps shall be elected by a majority of votes, each member entitled to vote being supplied with a list of members, and a voting paper to be filled up and presented personally to the presiding officer.

8. That each member shall be provided with a distinguishing badge, as may be agreed upon by the committee, which shall be worn at drill or on active service.

9. That the property of the corps be vested in the committee.

10. When the corps is assembled for drill or actual service, each member shall yield implicit obedience to his superior officer, and discharge the duty assigned him as quietly as possible.

11. That in all cases when the volunteers are called together, either for drill or actual service, the officer of Coast Guard in charge at the station shall take the command ; but should there be (from any unforeseen cause) no Coast Guard officer present, then the command shall be taken by the chief officer of volunteers present.*

12. That insubordination on the part of any member shall be followed by immediate dismissal from the brigade, on the offence being fully proved before the committee.

13. That the committee shall cause an abstract of the accounts to be prepared annually for the information of the members of the corps.

14. That any gentleman shall become an honorary member of the corps on payment of a guinea annually.

15. That any member of the corps wishing to alter any existing rule or propose a new one, shall give notice in writing to the secretary fourteen days previous to the annual meeting.

N.B.—The signal to the volunteers that a ship is on shore will be a gun fired twice, in quick succession, from the Spanish Battery, and as soon after as may be a coloured rocket fired in the direction of the town.

APPENDIX No. 9.

ALBERT MEDAL.

VICTORIA R.

Victoria, by the Grace of God, of the United Kingdom of Great Britain and Ireland, Queen, Defender of the Faith, &c.

To all to whom these presents shall come, greeting.

Whereas We, taking into Our royal consideration that great loss of life is sustained by reason of shipwrecks and other perils of the sea ; and taking also into consideration the many daring and heroic actions performed by mariners and others to prevent such loss and to save the lives of those who are in danger of perishing by reason of wrecks and perils of the sea ; and taking also into consideration the expediency of distinguishing such efforts by some mark of Our royal favour :

Now for the purpose of attaining an end so desirable as that of rewarding such actions as aforesaid, We have instituted and created, and by these presents for Us, Our Heirs and Successors, institute and create, a new Decoration, which We are desirous should be highly prized and eagerly sought after, and are graciously pleased to make, ordain, and establish the following Rules and Ordinances for the government of the same, which shall from henceforth be inviolably observed and kept.

First.—It is ordained, that the Distinction shall be styled “THE ALBERT MEDAL,” and shall consist of a gold, oval-shaped badge or decoration, enamelled in dark blue, with a Monogram composed of the letters V. and A., interlaced with an Anchor erect in gold, surrounded with a Garter in bronze, inscribed in raised letters of gold “For Gallantry in Saving Life at Sea,” and surmounted by a representation of the Crown of His Royal Highness the lamented Prince Consort, and suspended from a dark blue riband of five-eighths of an inch in width, with two white longitudinal stripes.

Secondly.—It is ordained, that the Medal shall be suspended from the left breast.

Thirdly.—It is ordained, that the names of those upon whom We may be pleased to confer the Decoration shall be published in the “London Gazette,” and a registry thereof kept in the Office of the Board of Trade.

Fourthly.—It is ordained, that any one who, after having received the Medal, again performs an act which, if he had not received such Medal, would have entitled him to it, such further act shall be recorded by a bar attached to the riband by which the Medal is suspended ; and for every such additional act an additional bar may be added.

Fifthly.—It is ordained, that the Medal shall only be awarded to those who, after the date of this Instrument, have, in saving or endeavouring to save the lives of others from shipwreck or other peril of the sea, endangered their own lives, and that such an award shall be made only on a recommendation to Us by the President of the Board of Trade.

Sixthly.—In order to make such additional provision as shall effectually preserve pure this most honourable Distinction, it is ordained, that if any person on whom such Distinction is conferred be guilty of any crime or disgraceful conduct which in Our judgment disqualifies him for the said Decoration, his name shall forthwith be erased from the registry of individuals upon whom the said Decoration shall have been conferred by an especial Warrant under Our Royal Sign Manual, and his Medal shall be forfeited. And every person to whom the said Medal is given, shall, before receiving the same, enter into an engagement to return the same if his name shall be so erased as aforesaid under this regulation. It is hereby farther declared, that We, Our Heirs and Successors, shall be the sole judges of the circumstance demanding such expulsion. Moreover, We shall at all times have power to restore such persons as may at any time have been expelled to the enjoyment of the Decoration.

Given at Our Court at St. James's, this seventh day of March one thousand eight hundred and sixty-six, in the twenty-ninth year of Our reign.

By Her Majesty's Command.

(Signed) G. GREY.

* This has reference exclusively to using the rocket apparatus for saving life. In all other matters the Receiver of Wreck or Officer of Coast Guard, or other person named in section 445 of the Merchant Shipping Act, 1854, will have command of all persons assembled at a wreck.

PART I.

ABSTRACT of RETURNS of WRECKS and CASUALTIES reported to have occurred on and near the Coasts of the UNITED KINGDOM.

Table 1. Wrecks and Casualties for Seven Years; giving the NUMBER of the CASUALTIES, the NUMBER of VESSELS lost or damaged, the TONNAGE of the Vessels, and the NUMBER of HANDS employed.

Months in which Casualties happened.	(1.) NUMBER of Casualties in							(2.) NUMBER of Vessels lost or damaged in							(3.) TONS BURTHEN OF SHIPS to which Casualties happened in							(4.) HANDS EMPLOYED in Ships to which Casualties happened in						
	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Jan.	115	206	137	186	229	171	246	152	243	175	221	285	214	281	29,187	43,063	37,645	53,702	56,123	43,024	46,780	1,377	1,824	1,493	2,160	2,453	1,959	2,266
Feb.	139	137	355	87	95	138	186	206	174	391	117	126	176	240	39,624	28,099	63,183	23,584	23,265	34,674	41,122	1,808	1,309	2,827	891	1,137	1,555	1,938
March	136	71	95	142	104	118	189	177	89	123	163	119	148	225	25,534	16,421	26,104	25,099	16,365	31,053	32,773	1,383	697	1,039	1,426	771	1,303	1,522
April	126	70	50	69	65	53	62	150	87	75	87	82	69	75	24,164	17,143	15,417	15,241	14,962	21,911	15,739	1,107	741	683	689	684	886	651
May	32	187	36	65	68	63	49	39	207	50	77	82	78	60	7,728	28,210	8,267	13,253	10,676	15,501	10,412	331	1,321	377	573	655	716	551
June	27	74	35	58	40	51	35	37	87	39	75	45	67	43	7,136	13,266	5,503	14,208	6,125	14,282	7,917	340	594	276	584	293	759	327
July	34	30	48	76	39	50	49	44	40	59	94	47	65	70	5,981	4,997	12,772	11,527	4,832	13,927	17,779	306	287	486	607	265	618	634
Aug.	52	74	73	52	65	67	69	65	102	98	66	87	93	95	9,798	13,933	16,843	12,081	11,063	19,529	14,227	481	671	706	537	596	878	772
Sep.	86	84	97	54	107	77	57	112	105	119	75	138	96	79	16,381	17,639	21,228	14,354	24,519	16,992	17,570	757	803	961	638	1,135	815	798
Oct.	343	156	90	283	210	183	280	392	180	112	346	247	228	311	56,090	25,648	19,093	64,107	44,927	42,779	45,877	2,661	1,172	818	2,745	1,837	1,952	2,065
Nov.	170	164	350	140	176	264	229	207	214	415	179	215	296	278	36,380	36,502	61,112	27,640	38,316	56,616	57,366	1,702	1,674	2,827	1,425	1,685	2,565	2,428
Dec.	156	126	128	276	466	155	205	188	149	163	327	528	211	255	28,477	25,795	29,187	51,153	89,577	41,855	69,801	1,378	1,121	1,377	2,298	3,992	1,859	2,611
TOTAL	1,416	1,379	1,494	1,488	1,664	1,390	1,656	1,769	1,677	1,819	1,827	2,001	1,741	2,012	286,480	270,716	316,304	325,949	340,750	352,143	377,363	13,631	12,214	13,870	14,578	15,503	15,865	16,563

Note.—In cases of Collision two and sometimes more Ships are involved in one Casualty. This accounts for the number of Ships in Column 2 exceeding the number of Casualties in Column 1.

Table 2. Wrecks and Casualties for Seven Years, showing the NUMBER OF SHIPS, and distinguishing BRITISH from FOREIGN SHIPS, SAILING SHIPS from STEAMERS, and COASTERS from OVERSEA.

Months in which Casualties happened.	British Ships.										Foreign Ships.					Ships whose Country and Employ- ment are unknown.	Total.
	Registered in the United Kingdom.					Registered in the Colonies.					Sailing Ships.				Total for Foreign Ships.		
	Sailing Ships.		Passing United Kingdom, but bound from and to Ports out of the United Kingdom.	Steamers.		Sailing Ships.		Total for British Ships.	In the Coasting Trade.	Bound to or from British Ports, but not in British Coasting Trade.	Passing United Kingdom, but bound from and to Ports out of the United Kingdom.	Steam Ships.					
	Coasting Colliers.	Other Coasters.		Oversea.	Coasters.	Oversea.	Employed in Coasting Trade, United Kingdom.						Oversea.	Total Ships registered in Colonies to which Cas- ualties have been in col- lision.			
January -	65	108	52	1	8	7	241	2					3	5	246	—	24
February -	63	84	40	—	8	7	202	—	3	3	205	—	13	5	—	18	240
March -	62	81	48	1	4	2	198	1	—	1	199	2	17	2	1	22	225
April -	18	20	15	—	3	3	59	—	1	1	60	2	9	—	—	11	75
May -	11	25	10	—	5	—	51	—	—	—	51	1	3	3	—	7	60
June -	8	13	9	—	3	1	34	1	—	1	35	—	2	5	—	7	43
July -	19	17	14	1	4	2	57	—	1	1	58	—	6	—	—	6	70
August -	24	30	14	—	7	2	77	1	1	2	79	3	7	1	—	11	95
September -	16	26	10	1	9	—	62	—	2	2	64	—	5	2	—	7	79
October -	81	94	72	3	6	3	259	1	1	2	261	2	25	10	—	37	311
November -	50	80	78	—	8	1	217	2	2	4	221	—	39	6	4	49	278
December -	49	71	62	—	10	8	200	—	11	11	211	1	30	5	1	37	255
Total in 1865	466	649	424	7	75	36	1,657	8	25	33	1,690	11	180	41	6	238	2,012
1859	459	517	311	—	57	30	1,374	13	32	45	1,419	17	182	43	3	245	1,769
1860	501	450	296	4	50	17	1,318	4	26	30	1,348	11	180	33	6	230	1,677
1861	551	431	341	4	48	24	1,399	23	26	49	1,448	10	222	35	7	274	1,819
1862	470	479	330	3	71	20	1,373	13	43	56	1,429	14	205	39	8	266	1,827
1863	510	608	404	8	47	15	1,592	13	44	57	1,649	22	195	52	3	272	2,001
1864	399	493	365	7	79	37	1,380	9	45	54	1,434	13	176	51	6	246	1,741

Table 3. Wrecks and Casualties for Seven Years, showing the NUMBER OF SHIPS, and distinguishing their CARGOES.

Months in which Casualties happened.	Ballast, not Colliers.	Coals.	Colliers in Ballast.	Cotton.	Fishing Smacks.	Fish or Oil.	Grain, Oatmeal, Flour, and Provisions.	General Cargo.	Metallic Ores.	Manure, Kelp, or Oil- cake.	Passengers and General Cargo.	Potatoes or Fruit.	Salt.	Sugar, Coffee, Spices, Tea, and Molasses.	Stone, Slate, Lime, or Bricks, and Clay.	Timber or Bark.	Wine or Spirits.	Various or unknown.	TOTAL.
January - -	26	78	14	5	37	1	14	8	19	7	4	9	5	3	15	8	2	26	281
February - -	42	68	19	7	1	10	8	7	13	4	-	1	2	-	12	4	-	42	240
March - - -	26	54	34	2	10	-	15	6	25	7	4	6	1	-	11	6	-	18	225
April - - -	13	14	8	-	4	-	2	3	8	2	3	-	1	-	6	3	-	8	75
May - - -	9	15	1	-	1	-	4	2	5	2	-	2	2	1	5	2	-	9	60
June - - -	4	8	2	-	4	-	5	1	6	2	-	-	-	-	4	1	-	6	43
July - - -	5	22	4	-	5	-	1	2	7	1	-	-	2	-	1	4	-	16	70
August - - -	11	21	9	-	9	1	4	3	5	-	-	2	3	-	7	2	-	18	95
September - -	18	16	4	-	-	5	2	-	9	-	4	-	-	-	3	5	-	13	79
October - -	28	104	21	2	14	8	20	8	28	3	1	1	3	1	20	23	-	26	311
November - -	28	67	13	-	1	5	43	9	18	4	6	6	6	1	14	17	-	40	278
December - -	29	68	11	4	12	9	16	18	7	3	10	3	1	1	11	17	2	33	255
TOTAL in 1865	239	535	140	20	98	39	134	67	150	35	32	30	26	7	109	92	4	255	2,012
Total in 1859 -	183	537	81	4	29	23	105	124	140	22	50	24	29	6	85	66	7	254	1,769
Total in 1860 -	240	510	71	6	41	18	84	92	94	30	37	12	29	6	84	77	2	244	1,677
Total in 1861 -	134	659	153	8	40	16	95	73	117	24	44	21	29	14	70	74	6	242	1,819
Total in 1862 -	165	593	128	2	84	19	109	93	113	31	55	13	25	9	100	89	2	197	1,827
Total in 1863 -	174	614	114	8	132	22	130	90	146	34	48	11	32	7	115	101	3	220	2,001
Total in 1864 -	134	523	99	9	74	30	123	103	126	28	49	15	32	8	96	83	9	200	1,741

Table 4. Wrecks and Casualties for Seven Years, showing the NUMBER OF SHIPS and distinguishing their AGE.

AGE.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	TOTAL.
Under 3 Years - -	153	104	94	122	135	149	151	908
3 and not exceeding 7 Years	205	206	259	271	289	211	260	1,701
8 " 10 " -	84	108	127	131	173	170	203	996
11 " 14 " -	143	155	162	155	155	148	173	1,091
15 " 20 " -	228	247	225	216	238	175	269	1,598
21 " 30 " -	216	225	270	266	298	252	352	1,879
31 " 40 " -	108	103	111	125	129	112	145	833
41 " 50 " -	68	56	64	59	61	42	84	434
51 " 60 " -	31	27	39	25	35	22	51	230
61 " 70 " -	21	7	17	10	9	18	20	102
71 " 80 " -	7	6	9	4	8	5	9	48
81 " 90 " -	3	3	1	—	1	1	5	14
91 " 100 " -	1	1	1	1	—	1	1	6
101 and upwards - -	1	1	1	—	—	—	1	4
Unknown - - -	500	428	439	442	470	435	288	3,002
TOTALS - -	1,769	1,677	1,819	1,827	2,001	1,741	2,012	12,846

Table 5. Wrecks and Casualties for the Year 1865, showing the NUMBER and AGES of the SHIPS, and distinguishing the NATURE of their VOYAGE.

Trade in which engaged.	Under 3 Years.	3 to 7.	8 to 10.	11 to 14.	15 to 20.	21 to 30.	31 to 40.	41 to 50.	51 to 60.	61 to 70.	71 to 80.	81 to 90.	91 to 100.	101 and upwards.	Un-known.	Total of each Trade.
Foreign-going -	74	77	76	56	65	57	10	4	5	—	1	—	—	—	64	489
Home* -	11	23	21	22	23	44	12	9	4	2	—	—	—	—	13	184
Coasting -	56	153	103	88	173	246	123	71	42	18	8	5	1	1	119	1,207
Passing the United Kingdom -	10	7	3	7	8	5	—	—	—	—	—	—	—	—	8	48
Age and trade unknown -	—	—	—	—	—	—	—	—	—	—	—	—	—	—	84	84
Total at each age	151	260	203	173	269	352	145	84	51	20	9	5	1	1	288	2,012

Note.—* These vessels were trading between a British port and a port on the Continental Coast between the River Elbe and Brest.

Table 6. Wrecks and Casualties for Seven Years, showing the NUMBER OF SHIPS, and distinguishing their DESCRIPTION.

Description of Ships.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	Description of Ships.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Steam Ships -	100	89	87	117	86	136	130	Brought forward	808	816	946	902	934	903	966
Barques -	167	148	192	184	187	209	187	Ketches -	25	13	3	22	23	16	18
Billy Boys -	5	13	—	1	4	5	—	Keels -	1	1	—	3	1	—	—
Brigs -	368	413	466	375	406	343	419	Luggers -	15	27	17	28	31	29	52
Brigantines -	110	115	149	175	194	162	187	Polaccas -	4	7	2	5	2	1	1
Chasse Marée -	4	2	—	3	2	2	—	Ships -	82	76	84	86	80	81	82
Cobles -	1	1	—	2	5	8	2	Schooners -	558	465	500	491	568	460	542
Cutters -	17	8	15	10	14	14	15	Sloops -	132	115	96	122	118	86	90
Dandies -	10	5	6	7	5	6	9	Smacks -	92	74	85	120	189	116	196
Flats -	4	3	8	6	14	7	10	Snows -	11	12	15	8	10	5	1
Galliot -	22	18	19	21	17	11	6	Trows -	1	1	2	2	1	1	1
Hermaphrodites -	—	—	2	—	—	—	—	Yachts -	2	4	2	2	3	1	1
Hookers -	—	1	2	1	—	—	1	Yawls -	—	15	4	9	—	8	6
Carried over -	808	816	946	902	934	903	966	Unknown -	38	51	63	27	41	34	56
								TOTAL -	1,769	1,677	1,819	1,827	2,001	1,741	2,012

Table 7. Wrecks and Casualties for Seven Years, showing the NUMBER OF SHIPS, and distinguishing their TONNAGE.

—	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Vessels not exceeding 50 Tons -	311	285	231	341	404	323	407
51 and not exceeding 100 " -	474	403	447	441	494	432	495
101 " 300 " -	543	600	686	784	867	658	793
301 " 600 " -	123	123	146	186	158	237	210
601 " 900 " -	36	30	36	44	46	41	53
901 " 1,200 " -	19	9	19	20	18	31	33
1,201 Tons and upwards -	5	6	6	11	14	19	21
Unknown -	258	221	248	—	—	—	—
TOTAL -	1,769	1,677	1,819	1,827	2,001	1,741	2,012

Table 8. Wrecks and Casualties for Seven Years, distinguishing the PARTS OF THE COASTS on which they happened.

Months in which Casualties happened.	EAST COAST : Dungeness to Duncansby Head (inclusive).							SOUTH COAST : Dungeness to Land's End (exclusive).							WEST COAST : Land's End to Mull of Kintyre (inclusive).							North and West Coasts of Scotland, from the Mull of Kintyre to Duncansby Head ; including the Northern Islands, Hebrides, Islay, Orkney, Shetland, &c.							Scilly Islands.						
	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
January	56	119	74	45	133	71	125	9	9	20	24	16	17	23	30	42	23	64	53	42	67	8	5	-	2	7	8	1	1	1	3	1	-	1	
February	66	87	168	40	38	77	138	15	6	33	6	11	9	18	44	31	47	21	29	31	24	-	4	2	3	3	9	1	1	6	1	-	-		
March	52	35	39	73	37	68	105	12	7	17	23	18	9	11	47	17	25	28	32	20	48	8	3	6	3	6	4	1	1	1	-	-	-		
April	62	31	22	33	35	22	30	9	10	9	10	5	5	11	36	21	12	16	10	13	17	4	3	1	2	8	4	-	-	-	-	-	-		
May	18	148	18	29	22	33	20	4	9	3	13	18	1	5	5	23	11	15	16	15	13	3	1	2	4	3	2	3	1	1	1	1	1		
June	12	24	14	15	17	22	26	5	29	3	8	3	5	-	5	11	8	19	14	14	5	4	4	4	4	4	1	-	-	-	-	-	-		
July	12	14	21	33	18	16	27	7	3	9	6	5	9	3	11	8	11	28	13	9	16	1	1	3	3	2	1	1	-	-	-	-	-	-	
August	21	31	30	26	30	32	36	4	9	11	8	11	9	5	15	25	20	8	17	12	15	3	2	2	3	2	3	6	1	1	-	-	-		
September	36	49	39	19	56	31	22	14	14	15	8	6	9	6	26	13	25	18	28	23	23	3	2	2	3	4	2	2	-	-	-	-	-		
October	136	87	36	189	93	93	172	24	5	10	17	21	21	30	169	35	26	54	59	37	51	2	2	3	11	11	8	4	1	1	1	1	1		
November	74	110	262	71	103	130	82	16	13	16	10	8	20	59	59	28	45	42	51	72	64	3	1	4	2	3	13	4	1	6	1	1	1		
December	77	77	53	192	263	108	85	14	12	18	13	24	11	16	36	24	38	36	134	23	43	5	3	2	22	12	3	23	4	1	-	-	-		
TOTAL	622	812	776	765	845	701	868	133	126	164	146	146	125	187	483	278	291	349	456	311	386	40	42	34	52	64	60	46	3	11	9	5	11	6	5

(Continued.)

Months in which Casualties happened.	Lundy Island.							Isle of Man.							Irish Coast.							TOTAL.						
	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
January	-	1	1	-	-	-	-	3	2	1	1	1	6	1	8	27	17	47	13	30	28	115	206	137	186	229	171	246
February	1	1	4	2	-	-	1	1	-	10	-	-	2	-	11	9	82	16	11	9	5	139	137	355	87	95	138	186
March	1	1	-	2	-	-	-	5	-	-	-	-	1	6	15	8	7	13	10	14	18	136	71	95	142	104	118	189
April	2	-	-	2	-	-	-	2	1	1	-	-	1	-	11	5	5	5	6	7	4	126	70	50	69	65	53	62
May	-	-	1	-	-	-	-	-	-	-	-	-	-	-	2	5	1	4	8	10	8	32	187	36	65	68	63	49
June	-	3	1	2	-	-	1	-	1	-	-	-	-	-	1	6	5	10	2	5	2	27	74	35	58	40	51	35
July	-	-	-	1	-	-	-	2	1	2	1	-	-	-	2	3	4	5	2	15	2	34	30	48	39	50	49	49
August	-	-	1	-	-	-	-	1	6	7	6	5	-	-	7	6	7	6	5	10	7	52	74	73	52	65	69	57
September	-	1	-	1	-	-	-	2	8	2	2	1	-	-	5	6	14	5	11	10	4	86	84	97	54	107	77	57
October	1	-	-	-	-	-	-	5	-	2	4	-	-	1	6	8	13	16	21	19	21	343	156	90	283	210	183	289
November	2	-	2	-	-	-	-	2	1	4	2	1	1	3	13	6	16	12	10	24	13	170	164	350	140	176	264	229
December	1	-	-	-	1	-	-	5	1	4	2	2	8	4	18	9	13	11	17	11	34	156	126	128	276	466	155	205
TOTAL	8	7	10	10	3	8	3	28	5	26	11	23	15	15	99	98	184	150	116	164	146	1,416	1,379	1,494	1,488	1,664	1,390	1,656

Table 9. Wrecks and Casualties for Seven Years, distinguishing them according to the DIRECTION of the Wind.

[illegible]

Table 10. Wrecks and Casualties, for Seven Years, distinguishing them according to the FORCE of the Wind.

Force of Wind.*	January.						February.						March.						April.						May.						June.						July.						Force of Wind.							
	1851	1861	1861	1861	1861	1881	1851	1861	1861	1861	1861	1881	1851	1861	1861	1861	1861	1881	1851	1861	1861	1861	1861	1881	1851	1861	1861	1861	1861	1881	1851	1861	1861	1861	1861	1881														
Force 0	5	—	2	—	—	3	2	—	—	1	6	2	2	3	1	5	1	3	1	2	1	1	2	1	2	1	1	1	1	2	1	1	1	1	1	1	Force 0													
" 1	2	5	1	—	—	4	7	2	1	—	2	3	2	1	3	5	10	6	4	2	1	2	4	6	4	1	1	2	2	2	2	2	2	2	2	" 1														
" 2	7	4	5	2	—	7	5	3	1	5	1	3	5	3	2	2	2	2	1	2	1	2	3	5	2	4	2	3	3	3	3	3	3	3	3	" 2														
" 3	3	7	4	6	—	1	4	—	3	4	4	4	3	1	1	1	3	2	1	1	1	1	2	1	2	1	1	2	1	1	1	1	1	1	1	" 3														
" 4	5	14	13	11	6	17	17	10	8	11	9	15	7	9	7	9	14	15	11	6	11	8	8	10	10	7	3	3	3	3	3	3	3	3	3	" 4														
" 5	19	20	20	19	25	23	16	15	14	17	13	20	21	20	15	12	12	18	12	12	12	17	17	17	17	17	17	17	17	17	17	17	17	17	17	" 5														
" 6	14	33	18	24	30	18	26	17	18	21	15	14	22	21	20	15	16	16	16	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	" 6														
" 7	8	15	2	10	12	5	15	11	8	10	4	2	6	11	3	2	13	6	4	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	" 7														
" 8	4	36	18	27	27	10	5	15	11	15	8	6	6	8	16	10	8	17	18	10	8	10	10	10	10	10	10	10	10	10	10	10	10	10	10	" 8														
" 9	15	31	27	25	34	27	11	20	15	40	4	8	16	76	22	6	24	29	24	23	13	8	6	3	15	3	2	2	2	2	2	2	2	2	2	" 9														
" 10	16	32	15	29	60	17	29	16	136	—	3	31	5	12	6	14	16	4	7	10	13	6	—	4	6	2	—	—	—	—	—	—	—	—	—	" 10														
" 11	7	9	6	18	8	5	9	1	24	76	—	2	13	5	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	" 11														
" 12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	" 12														
Variable	—	—	3	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Variable														
Unknown	6	3	3	4	10	11	8	4	4	13	2	1	12	9	—	1	5	3	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	Unknown														
TOTAL-	115	206	137	186	229	171	246	139	137	355	87	95	138	186	136	71	95	142	104	118	189	126	70	50	69	65	53	62	32	187	36	65	68	63	49	27	44	35	58	40	51	35	34	30	48	76	39	50	49	TOTAL.

(Continued.)

Force of Wind.*	August.			September.			October.			November.			December.			TOTAL.						Force of Wind.													
	1855	1860	1861	1865	1860	1861	1865	1860	1861	1865	1860	1861	1865	1860	1861	1865	1860	1861	1865	1860	1861		1865	1860	1861	1865	1860	1861	1865	1860	1861	1865			
Force 0	2	1	3	2	2	2	2	1	1	1	1	1	1	1	1	3	3	1	—	21	8	10	23	15	21	20	Force 0								
" 1	5	1	5	3	1	4	—	—	1	4	5	4	1	1	1	4	4	1	4	42	23	14	28	28	19	22	" 1								
" 2	3	7	7	—	2	5	3	5	—	4	1	4	7	1	1	11	8	1	11	60	47	51	56	39	97	100	" 2								
" 3	3	1	—	4	2	1	2	—	3	6	3	3	2	1	8	6	3	2	12	33	14	43	43	27	36	24	" 3								
" 4	5	3	6	12	9	5	8	10	7	12	14	13	10	8	12	14	10	8	24	93	90	103	110	100	142	146	" 4								
" 5	9	15	12	9	17	8	14	19	21	25	23	21	28	17	28	22	17	21	38	174	181	171	187	174	220	203	" 5								
" 6	9	12	10	12	13	10	14	20	21	28	26	26	13	19	27	13	19	27	27	180	171	149	195	174	230	163	" 6								
" 7	6	6	1	2	6	2	4	11	6	8	5	18	15	7	5	15	7	5	28	71	90	66	75	57	35	47	" 7								
" 8	3	1	5	12	2	7	6	8	36	27	3	12	20	39	23	19	3	11	13	102	137	124	170	195	39	69	" 8								
" 9	12	23	10	2	9	6	10	14	15	32	15	32	68	10	36	45	37	209	209	209	193	230	199	269	221	552	" 9								
" 10	3	4	4	1	3	4	23	28	4	70	31	28	15	112	5	17	97	26	14	182	168	311	218	224	231	120	" 10								
" 11	—	—	—	—	2	26	7	6	2	26	7	5	10	2	4	17	12	2	10	88	101	102	63	82	30	39	" 11								
" 12	—	—	—	—	3	30	18	10	7	13	1	1	29	1	11	53	—	14	87	139	52	69	205	42	99	" 12									
Variable	—	—	—	—	1	—	—	—	1	2	1	1	—	—	—	—	—	2	2	7	5	20	6	1	9	2	Variable								
Unknown	4	4	2	1	—	4	2	7	16	11	10	8	3	2	7	18	12	6	9	67	42	48	46	74	73	50	Unknown								
TOTAL -	52	74	73	52	67	69	86	94	97	54	107	77	57	343	156	90	283	210	183	280	170	164	350	140	176	264	229	1,416	1,379	1,494	1,488	1,664	1,390	1,656	TOTAL.

* Figures to denote the Force of the Wind.

- [illegible]

Table 11. Wrecks and Casualties for Seven Years, showing the NUMBER OF SHIPS, and distinguishing the Description of CERTIFICATES held by the Masters.

Year.	Ships commanded by Masters holding Certificates of Competency.			Ships commanded by Masters holding Certificates of Service.			Ships in Home and Coasting Trade, commanded by Masters not possessing and not required to have Certificates.	Ships commanded by Foreigners not holding British Certificates.	Unknown.	Total.
	In Foreign Trade.	In Home Trade.	Total.	In Foreign Trade.	In Home Trade.	Total.				
1859	121	122	243	88	280	368	635	230	293	1,769
1860	94	168	262	52	321	373	578	228	236	1,677
1861	150	140	290	79	285	364	652	274	239	1,819
1862	164	157	321	84	264	348	720	266	172	1,827
1863	209	141	350	77	271	348	844	267	192	2,001
1864	204	150	354	85	190	275	694	246	172	1,741
1865	213	137	350	89	206	295	883	238	246	2,012

Table 12. Wrecks and Casualties for Seven Years, showing the NUMBER OF SHIPS, distinguishing the Ships and Cargoes INSURED and UNINSURED, and the Amount of Insurance where known.

Years in which Casualties happened.	Number of Vessels and Cargoes reported to be Insured, and the Amount of Insurance.						Number of Vessels and Cargoes reported as not insured.		Number of Vessels and Cargoes, whether Insured or not, unknown.		Vessels in Ballast.	TOTAL.	* Out of the total number of Vessels and Cargoes lost or damaged, the estimated loss of the following only have been reported.					
	Vessels.		Cargoes.		Total Amount of Insurance.	Vessels.	Cargoes.	Vessels.	Cargoes.	Vessels.			Cargoes.		Total estimated Loss as reported.			
	Number.	Amount.	Number.	Amount.						Number.			Amount.	Number.		Amount.		
1859	591	£ 667,032	89	£ 101,612	£ 768,644	329	178	849	1,223	279	1,769	907	£ 532,147	294	£ 221,860	£ 754,007		
1860	533	484,605	59	21,274	505,879	289	150	855	1,157	311	1,677	839	512,242	259	94,611	606,853		
1861	744	926,471	123	151,524	1,077,995	325	199	750	1,188	309	1,819	1,230	780,144	443	223,901	1,004,045		
1862	711	846,198	84	70,116	916,314	371	223	745	1,163	357	1,827	1,237	728,336	401	212,704	941,040		
1863	717	688,820	92	30,957	719,777	362	198	922	1,328	383	2,001	1,240	659,431	355	327,436	986,867		
1864	541	662,502	57	24,485	687,487	223	85	977	1,301	298	1,741	1,035	706,074	290	140,934	847,008		
1865	811	1,102,070	108	115,905	1,217,975	298	135	903	1,312	457	2,012	1,331	1,060,568	468	500,467	1,561,035		
TOTAL -	4,648	5,377,698	612	515,873	5,894,071	2,197	1,168	6,001	8,672	2,394	12,846	7,819	4,978,942	2,510	1,721,913	6,700,855		

* Note.—The Figures given in this part of the Table depend on information furnished by the Officers of the ships at the time of the casualty, and are consequently but approximations.

Table 13. Wrecks and Casualties for Seven Years (excluding Collisions) which have involved TOTAL LOSS, distinguishing the Cause of each Loss.

Months in which Casualties happened.	CLASS I. Arising from Stress of Weather.										CLASS II. Arising from Inattention, Carelessness, and Neglect.					CLASS III. Arising from Defects in Ships or Equipments.					CLASS IV. Arising from various Causes.												Grand Total.		
	Foundered.	Driven or run on a Sand or Lee Shore.	Parted Cables.	Dragged Anchors.	Damage to Hull or Rudder, or Loss of Masts, Yards, Sails, &c.	Shifting of Cargo or Ballast.	Missing Stays.	Railing to make Harbours, or stranding whilst entering.	Capsized.	Total of Class I.	Error, Neglect, or Incompetency of Master or Mate.	Error, Neglect, or Incompetency of Pilot.	Improper Stowage.	Not heaving Lead.	Total of Class II.	Foundered from Unseaworthiness.	Overladen.	Defective Manning, unsound Gear or Equipment, imperfect Repairs, or defective Construction.	Local Attraction and Defects of Compasses.	Total of Class III.	Thick and foggy Weather.	Leaky, &c. through heavy Seas.	Strong Currents or heavy Seas and light Winds.	Want of Lights or Buoys on Coasts and Shoals.	Want of Pilot.	Want of Tugs, or defective Tow Ropes.	Striking on sunken Wreck, &c.	Spontaneous Combustion.	Injured by Fire or Lightning.	Damage to Boilers or Machinery.	Accidental.	Combination of Causes.		Total of Class IV.	Causes unknown.
January -	17	15	8	2	10	1	1	-	-	54	9	1	-	3	13	2	-	1	-	3	2	2	3	8	1	1	1	-	1	-	-	-	8	86	
February -	4	2	2	1	2	-	-	1	-	12	8	-	-	6	14	-	1	-	1	1	2	2	2	7	-	-	-	-	-	-	-	-	5	39	
March -	7	6	1	2	-	-	2	2	-	20	3	1	-	2	6	2	-	-	-	2	1	3	3	9	-	-	1	-	1	-	-	-	-	3	40
April -	-	-	-	-	-	-	1	-	-	1	3	-	-	4	7	-	-	-	-	-	-	2	1	4	-	-	-	-	-	-	-	-	-	2	14
May -	2	2	-	1	-	-	-	-	-	5	3	-	-	1	4	-	-	-	-	-	-	-	1	2	-	-	-	-	1	-	-	-	-	1	11
June -	1	-	-	-	-	-	-	-	-	1	1	1	-	1	3	2	-	-	-	2	-	2	-	3	1	-	-	-	-	-	-	-	-	3	11
July -	1	-	-	-	1	-	-	-	1	3	-	-	-	-	-	3	-	-	-	4	1	1	-	1	-	-	-	-	-	-	-	-	-	8	
August -	1	4	-	-	1	-	-	-	-	6	1	-	-	-	1	2	-	-	-	2	2	2	1	2	-	-	-	-	2	-	-	-	-	7	16
September -	-	-	1	-	-	-	-	-	-	1	5	-	-	1	6	6	-	-	-	6	1	1	2	1	-	-	-	-	-	-	-	-	-	4	17
October -	9	16	5	8	13	-	5	5	-	61	11	-	-	5	16	10	-	-	-	11	1	1	2	2	-	-	1	-	-	-	-	-	-	8	98
November -	7	10	10	6	1	2	2	1	1	40	7	1	-	6	14	-	2	-	-	2	2	2	2	-	-	-	-	1	-	-	-	-	-	6	66
December -	6	10	3	10	7	1	1	3	-	41	7	1	-	7	15	3	-	2	-	5	-	-	1	1	-	-	-	-	-	-	-	-	-	3	64
Total in 1865	55	65	30	30	35	4	12	12	2	245	58	5	-	36	99	30	2	-	-	38	14	12	17	1	-	4	2	1	2	-	-	-	-	61	470
Total in 1859	80	72	41	17	50	5	15	15	3	298	57	7	-	20	84	32	-	7	3	42	23	-	12	2	4	5	5	4	4	2	6	3	70	537	
Total in 1860	53	73	45	35	39	5	10	11	7	278	74	8	-	21	103	39	2	2	6	49	17	-	7	-	2	5	2	1	1	-	2	3	40	476	
Total in 1861	61	109	37	14	54	5	6	11	5	302	61	7	-	21	89	45	1	2	-	48	17	-	6	1	3	2	3	1	1	-	12	3	49	513	
Total in 1862	60	41	48	18	40	5	10	17	3	242	42	6	-	24	72	13	1	5	6	25	27	15	20	1	1	-	7	-	-	-	18	7	96	455	
Total in 1863	119	51	41	24	56	8	11	18	4	382	42	4	2	13	61	19	1	8	3	31	16	8	11	-	1	2	14	1	2	-	9	1	65	503	
Total in 1864	41	43	22	13	21	2	8	12	1	163	53	11	1	24	89	25	3	8	3	39	21	15	10	1	1	1	4	-	2	-	8	1	64	386	

Table 14. Wrecks and Casualties for Seven Years (excluding Collisions) which have involved PARTIAL LOSS, distinguishing the Cause of each Loss.

Months in which Casualties happened.	CLASS I. Arising from Stress of Weather.										CLASS II. Arising from Inattention, Carelessness, or Neglect.				CLASS III. Arising from Defects in Ships or Equipments.						CLASS IV. Arising from various Causes.										Grand Total.						
	Leaky.	Driven or run on a Sand or Lee Shore.	Parted Cables.	Dragged Anchors.	Damage to Hull or Rudder, or Loss of Masts, Yards, Sails, &c.	Shifting of Cargo or Ballast.	Missing Stays.	Failing to make Harbours, or stranding whilst entering.	Capsized.	TOTAL OF CLASS 1.	Error, Neglect, or Incompetency of Master or Mate.	Error, Neglect, or Incompetency of Pilot.	Improper Stowage.	Not heaving Lead.	TOTAL OF CLASS 2.	Leaky from Unseaworthiness.	Overladen.	Defective Charts, unsound Gear or Equipment, imperfect Repairs, or defective Construction.	Local Attraction and Defects of Compasses.	TOTAL OF CLASS 3.	Thick and foggy Weather.	Leaky, &c. through heavy Seas.	Strong Currents or heavy Winds.	Want of Lights or Buoys on Coasts and Shoals.	Want of Pilot.	Want of Power in Steam Tugs, or defective Tow Hopes.	Striking on sunken Wreck, &c.	Spontaneous Combustion.	Injured by Fire or Lightning.	Damage to Boilers or Machinery.		Accidental.	Combination of Causes.	TOTAL OF CLASS 4.	Causes unknown.		
January -	10	4	9	2	53	4	6	2	-	90	11	1	-	2	14	5	-	1	1	7	3	3	3	3	-	-	-	-	-	-	1	-	-	10	3	124	
February -	13	8	2	2	26	2	1	3	-	57	9	-	-	8	17	1	-	-	1	2	7	7	3	-	-	2	1	1	-	-	-	-	-	13	5	94	
March -	20	5	13	4	20	2	3	5	-	72	9	3	-	2	14	3	-	2	-	5	3	5	5	3	-	3	-	3	2	-	-	4	-	21	1	113	
April -	1	-	1	-	2	-	-	-	-	4	8	1	-	12	21	1	-	-	-	1	3	4	2	-	-	-	-	-	-	-	-	-	-	9	-	35	
May -	3	1	2	2	4	-	-	1	-	13	2	-	-	2	4	1	-	2	1	4	-	-	-	5	-	-	-	-	-	-	-	-	-	5	1	27	
June -	1	-	-	-	2	-	-	-	-	3	6	-	-	-	6	-	-	1	-	1	3	3	-	-	-	-	-	-	-	-	-	-	-	6	-	16	
July -	-	-	-	-	2	-	-	-	-	2	1	-	-	2	3	8	-	2	-	10	-	-	-	2	-	1	-	-	-	1	-	-	-	5	-	20	
August -	1	1	-	-	5	-	-	-	-	7	3	1	-	1	5	1	-	-	1	2	1	4	-	-	3	-	3	1	1	-	-	2	-	13	-	27	
September -	2	-	1	-	2	-	1	-	-	6	3	-	-	2	5	1	-	2	-	3	-	5	-	-	-	-	-	-	-	-	-	-	-	5	-	19	
October -	26	7	9	8	44	7	3	4	1	109	9	3	-	2	14	2	-	2	-	4	3	6	2	-	-	3	1	-	1	-	1	-	2	-	18	6	151
November -	10	3	15	8	36	3	3	2	1	81	7	2	-	5	14	3	1	2	-	6	3	5	1	-	1	-	-	-	-	-	-	4	-	14	-	115	
December -	11	2	6	9	28	1	-	-	-	57	9	3	-	8	20	1	-	-	2	3	1	4	1	-	-	-	-	-	-	-	3	-	10	1	91		
Total in 1865	98	31	58	35	224	19	17	17	2	501	77	14	-	46	137	27	1	14	6	48	27	42	22	-	6	5	5	3	2	1	16	-	129	17	832		
Total in 1859	101	19	32	23	103	5	13	10	2	308	69	10	-	18	97	20	-	16	6	42	39	-	11	2	-	-	9	7	2	1	1	13	3	88	5	540	
Total in 1860	56	42	41	28	156	17	9	16	2	367	80	14	-	16	110	14	4	23	8	49	26	-	7	3	6	6	-	10	1	1	1	12	5	72	7	605	
Total in 1861	87	73	35	28	165	7	15	11	3	424	63	17	1	21	102	30	2	23	1	56	25	-	7	4	1	1	4	7	3	4	2	17	1	75	1	658	
Total in 1862	59	17	45	43	182	18	7	13	2	386	77	11	-	27	115	16	5	12	9	42	30	46	13	2	10	2	2	7	1	1	-	26	6	144	8	695	
Total in 1863	80	44	70	52	244	23	5	32	-	550	76	17	-	22	115	11	3	15	1	30	27	28	21	2	1	2	2	8	3	2	1	28	3	126	9	830	
Total in 1864	72	22	23	31	119	9	8	13	2	299	79	27	1	41	148	18	2	28	5	53	37	43	14	1	3	-	-	6	-	1	4	32	3	144	9	653	

Table 15. Wrecks and Casualties for Seven Years, arising from COLLISIONS which have involved TOTAL LOSS, distinguishing the Causes of the Collisions.

Months in which Casualties happened.	Parting Cables, Dragging Anchors, Breaking Sheer, and Fouling.	Missing Stays.	Anchoring in Foul Berth.	Want of Sea Room.	Thick and Foggy Weather.	Bad Look-out.	Neglecting to show proper Light.	Neglect or Misapplica- tion of Steering and Sailing Rules.	Error of Pilot.	Want of Seamanship.	General Negligence and want of Caution.	Inevitable Accident.	Error in Judgment.	Cause unknown.	TOTAL.
January -	1	-	-	-	-	3	-	1	-	-	-	1	-	-	6
February -	-	-	-	-	-	4	1	2	-	1	-	1	1	-	10
March -	-	-	-	-	-	2	-	-	-	-	1	-	1	-	4
April -	-	-	-	-	-	-	-	2	-	-	1	-	1	-	4
May -	-	-	-	-	-	-	-	1	-	1	-	-	-	-	2
June -	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
July -	-	-	-	-	-	2	-	1	-	-	1	-	-	-	4
August -	-	-	-	-	-	3	-	2	-	-	2	-	-	-	7
September -	-	-	-	-	-	4	-	-	-	-	-	-	-	-	4
October -	-	-	-	-	-	-	2	-	-	-	-	-	-	1	3
November -	2	-	-	-	-	3	2	2	-	1	-	-	1	-	11
December -	1	-	-	-	-	7	1	2	-	1	-	1	1	-	14
TOTAL in 1865	4	-	-	-	1	28	6	13	-	4	5	3	5	1	70
Total in 1859	2	-	-	-	7	18	5	12	-	1	2	8	-	3	58
Total in 1860	2	1	-	-	2	19	5	12	1	2	5	9	2	5	65
Total in 1861	1	-	-	1	2	20	11	18	-	1	2	3	1	2	62
Total in 1862	3	-	-	1	4	18	4	22	1	-	4	5	3	1	66
Total in 1863	7	2	-	-	5	14	8	16	-	2	2	4	2	4	66
Total in 1864	4	2	-	-	3	17	11	19	-	-	6	7	5	7	81

Table 16. Wrecks and Casualties for Seven Years, arising from COLLISIONS involving PARTIAL LOSS, distinguishing the Causes of the Collisions.

Months in which Casualties happened.	Parting Cables, Dragging Anchors, Breaking Sheer, and Fouling.	Missing Stays.	Anchoring in Foul Berth.	Want of Sea Room.	Thick and Foggy Weather.	Bad Look-out.	Neglecting to show proper Light.	Neglect or Misapplica- tion of Steering and Sailing Rules.	Error of Pilot.	Want of Seamanship.	General Negligence and want of Caution.	Inevitable Accident.	Error in Judgment.	Cause unknown.	TOTAL.
January -	5	-	1	-	1	4	2	4	-	3	4	4	2	-	30
February -	7	-	2	1	1	9	-	4	1	3	2	4	6	3	43
March -	6	-	-	1	-	4	3	6	-	3	-	3	3	3	32
April -	-	1	-	-	1	2	-	1	-	-	1	1	2	-	9
May -	-	-	-	-	2	-	1	2	1	1	2	-	-	-	9
June -	-	-	1	-	-	-	-	-	-	-	3	1	2	-	7
July -	1	-	-	-	4	3	-	3	-	2	1	2	1	-	17
August -	-	-	-	-	-	8	1	4	-	1	-	4	1	-	19
September -	1	-	-	-	2	7	-	6	-	-	1	-	-	-	17
October -	3	-	1	1	1	6	1	7	-	-	1	2	5	-	28
November -	9	1	1	1	-	6	-	5	-	4	1	6	3	-	37
December -	5	1	2	2	-	9	4	4	-	1	6	-	1	1	36
TOTAL in 1865	37	3	8	6	12	58	12	46	2	18	22	27	26	7	284
Total in 1859	23	3	1	4	17	65	15	66	1	5	20	41	25	5	291
Total in 1860	32	1	7	4	11	52	13	30	2	16	26	21	11	7	233
Total in 1861	19	5	4	2	19	54	18	47	1	11	33	28	13	7	261
Total in 1862	43	2	5	12	14	55	11	63	3	6	12	19	18	9	272
Total in 1863	49	3	3	4	4	42	5	48	1	13	21	35	31	6	265
Total in 1864	24	4	1	5	16	47	12	68	6	11	18	31	15	12	270

Table 17. SUMMARY of Tables 11, 12, 13, and 14.

—	Collisions.							Total.	Annual Average.	Casualties other than Collisions.							Total.	Annual Average.
	1859	1860	1861	1862	1863	1864	1865			1859	1860	1861	1862	1863	1864	1865		
Casualties involving total loss	58	65	62	66	66	81	70	468	66½	527	476	513	455	503	386	470	3,330	475½
Casualties involving partial loss	291	233	261	272	265	270	284	1,876	268	540	605	658	695	830	653	832	4,813	687½
TOTAL CASUALTIES	349	298	323	338	331	351	354	2,344	334½	1,067	1,081	1,171	1,150	1,333	1,039	1,302	8,143	1,163½

—	Total Casualties.							Total.	Annual Average.
	1859	1860	1861	1862	1863	1864	1865		
Casualties involving total loss -	585	541	575	521	569	467	540	3,798	542½
Casualties involving partial loss -	831	838	919	967	1,095	923	1,116	6,689	955½
TOTAL CASUALTIES	1,416	1,379	1,494	1,488	1,664	1,390	1,656	10,487	1,498½

Table 18. Wrecks and Casualties for Seven Years arising from COLLISION, distinguishing the TIME and the STATE OF THE WEATHER when each Collision happened.

Month in which Casualties happened.	TIME.																		Gross Total.
	Between 6 A.M. and 6 P.M.										Between 6 P.M. and 6 A.M.								
	Dark.	Dark and Clear.	Very Dark.	Hazy.	Cloudy.	Thick and Foggy.	Clear and Fine.	Squally or unknown.	Total.	Dark.	Dark and Clear.	Very Dark.	Hazy.	Cloudy.	Thick and Foggy.	Clear and Fine.	Squally or unknown.	Total.	
January - - -	1	-	3	-	1	5	3	13	-	4	-	7	1	2	2	7	23	36	
February - - -	-	-	2	1	5	7	4	19	7	1	-	4	-	5	7	10	34	53	
March - - -	-	-	-	2	1	7	1	11	2	7	-	1	-	3	5	7	25	36	
April - - -	-	-	-	-	-	-	-	-	-	1	-	1	-	3	8	-	13	13	
May - - -	-	-	1	-	-	2	-	3	-	-	-	2	-	3	3	-	8	11	
June - - -	-	-	-	-	-	3	1	4	-	-	-	3	-	-	-	1	4	8	
July - - -	-	-	-	-	4	4	1	9	-	2	1	2	1	1	5	-	12	21	
August - - -	-	-	-	1	1	2	1	5	-	3	-	2	3	1	10	2	21	26	
September - - -	-	-	-	-	3	3	-	6	-	1	-	1	1	3	8	1	15	21	
October - - -	-	-	2	1	3	3	3	12	-	3	1	2	1	4	4	4	19	31	
November - - -	-	-	3	-	3	10	8	24	-	-	1	2	2	3	11	5	24	48	
December - - -	1	1	3	1	1	5	4	16	1	-	1	10	-	3	14	5	34	50	
Total in 1865 - -	2	1	14	6	22	51	26	122	10	22	4	37	9	31	77	42	232	354	
Total in 1859 - -	1	1	5	10	15	62	22	116	12	8	1	26	29	45	87	25	233	349	
„ 1860 - -	2	-	4	6	13	42	19	86	16	6	7	20	21	26	81	35	212	298	
„ 1861 - -	-	-	2	10	13	42	27	94	10	-	-	23	34	34	87	41	229	323	
„ 1862 - -	-	-	5	13	14	49	21	102	15	-	6	15	19	47	92	42	236	338	
„ 1863 - -	1	-	6	12	7	60	49	135	11	2	6	16	24	21	66	50	196	331	
„ 1864 - -	-	-	14	7	7	64	17	109	16	18	8	26	25	30	76	43	242	351	

Table 19. WRECKS and CASUALTIES arising from COLLISION during the Years 1850 to 1865, inclusive; both Vessels under Way from those happening with

Month.	Hour at which Sun rises and sets.	Collision between Two Steam Vessels.						Collision between Two Sailing Vessels.											
		Both under Way.*						Both under Way.						One under Way and One at Anchor.					
		1850	1851	1852	1853	1854	1855	1850	1851	1852	1853	1854	1855	1850	1851	1852	1853	1854	1855
January	8.8	-	-	-	-	-	1	2	17	3	12	10	9	1	5	-	1	1	2
February	7.42	-	-	-	-	-	-	2	12	9	13	7	7	-	-	-	-	-	-
March	6.46	-	-	-	-	-	-	1	6	2	3	3	2	-	-	-	-	-	2
April	5.39	-	-	-	-	1	1	2	5	4	8	9	13	-	1	2	-	-	1
May	4.33	-	1	-	-	-	-	1	3	1	1	1	10	-	-	-	1	-	1
June	3.52	-	-	-	-	-	-	1	1	1	1	1	5	-	-	-	-	-	1
July	3.50	-	-	-	1	-	-	1	1	2	2	1	10	-	-	-	-	-	2
August	3.17	-	-	-	-	1	1	1	1	2	2	5	9	-	-	-	-	-	1
September	2.28	-	-	-	-	-	2	2	11	11	4	3	15	-	-	1	-	-	2
October	1.55	-	-	-	-	-	2	2	13	7	3	14	15	-	-	2	-	-	2
November	1.31	-	-	-	-	-	1	2	35	8	3	15	36	-	-	3	-	-	2
December	1.05	-	1	1	1	-	1	2	13	9	7	8	41	-	3	-	-	1	6
		-	2	2	1	2	6	25	124	61	61	77	172	1	10	9	3	2	21

(Continued.)

Month.	Hour at which Sun rises and sets.	Collision between Two Steam Vessels.										Collision between Two Sailing Vessels.														Collision between a Steam Vessel and a Sailing Vessel.															
		Both under Way.*										Both under Way.										One under Way and One at Anchor.				Both under Way.															
		1856		1857		1858		1859		1860		1856		1857		1858		1859		1860		1856		1857		1858		1859		1860											
		Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.										
January	8.8	-	-	2	-	1	-	-	-	1	18	3	13	-	12	1	18	-	11	-	-	4	5	-	3	3	5	3	8	-	11	1	8	-	5	2	6	-	4		
February	7.42	-	1	-	-	-	-	-	-	-	1	15	2	8	2	10	8	21	1	12	-	2	-	1	1	5	6	15	4	4	-	8	1	3	1	5	1	7	-	5	
March	6.48	-	-	-	-	-	-	-	-	-	1	18	3	16	5	13	5	16	4	8	4	5	-	-	1	8	4	4	1	-	-	4	3	2	4	-	8	1	1		
April	5.39	-	-	-	-	-	-	-	-	-	4	12	-	9	3	6	3	9	1	3	-	2	2	1	-	1	4	3	2	1	2	1	6	-	3	1	1	1	4		
May	4.33	-	-	-	-	-	-	-	-	-	1	17	3	3	4	1	2	2	4	7	1	-	-	-	1	1	-	2	1	1	-	3	1	1	2	2	1	-	1	-	
June	3.52	-	-	-	-	-	-	-	-	-	2	2	3	4	1	-	6	2	3	8	3	-	-	-	-	1	-	-	1	1	2	2	1	2	-	1	-	-	-	-	
July	3.50	-	-	-	-	-	-	-	-	-	2	5	3	5	8	4	1	3	2	2	-	-	-	-	2	-	-	1	-	-	-	2	1	-	-	3	2	3	4	1	
August	3.17	1	-	-	1	-	-	-	-	-	1	3	4	11	-	10	3	3	5	4	-	1	-	-	-	2	3	1	2	3	-	1	2	8	-	2	-	2	5	1	
September	2.28	1	1	-	1	-	1	-	-	-	2	8	4	9	5	13	5	8	1	12	-	-	1	1	-	1	4	3	1	-	1	5	1	6	-	4	1	3	1	3	
October	1.55	-	-	-	-	-	-	-	-	-	-	23	2	16	2	17	2	20	-	14	1	1	-	1	3	3	-	3	-	3	-	5	-	7	1	13	1	6	1	3	
November	1.31	-	-	-	-	-	1	-	-	-	3	19	-	13	1	14	5	18	9	19	3	7	-	2	1	3	3	-	1	3	-	8	1	5	3	2	-	5	1	5	
December	1.05	-	1	-	1	-	1	-	2	1	4	17	6	13	5	13	2	13	1	11	-	5	3	3	1	5	-	7	1	5	-	5	-	4	1	8	1	5	-	3	
		2	4	2	5	2	8	1	2	2	1	23	157	33	120	36	113	43	139	31	111	12	23	10	14	10	33	27	44	17	29	7	51	13	53	10	52	10	46	15	30
		6	7	10	3	3						179	153	149	182	142						35	24	43	71	46	58	66	62	56	45										

(Continued.)

Month.	Hour at which Sun rises and sets.	Collision between Two Sailing Vessels.										Collision between a Steam Vessel and a Sailing Vessel.				
		Both under Way.					One under Way and One at Anchor.					Both under Way.				
		1861	1862	1863	1864	1865	1861	1862	1863	1864	1865	1861	1862	1863	1864	1865
		Day.	Night.	Day.	Night.	Day.	Day.	Night.	Day.	Night.	Day.	Day.	Night.	Day.	Night.	Day.
January	8.8	3	20	1	20	3	3	5	1	-	7	9	2	7	-	4
February	7.42	5	31	4	16	5	5	12	5	15	13	14	2	2	2	1
March	6.46	1	15	3	10	3	8	5	13	7	18	4	3	-	2	2
April	5.39	9	11	1	15	4	6	-	7	-	9	-	1	-	-	-
May	4.33	4	5	2	6	6	3	1	6	1	6	3	1	1	1	1
June	3.52	1	-	4	9	1	1	6	1	1	1	-	-	-	-	-
July	3.50	3	5	4	9	4	1	4	5	7	6	-	-	-	-	-
August	3.17	5	12	3	7	9	5	2	9	2	16	1	3	1	-	1
September	2.28	-	5	2	12	4	8	4	10	1	8	1	6	1	-	1
October	1.55	3	10	5	20	8	12	4	18	4	14	-	3	3	5	-
November	1.31	9	22	7	11	2	14	2	10	3	12	6	12	4	4	2
December	1.05	1	16	4	15	3	13	4	22	4	15	3	4	3	3	5
		44	142	40	150	52	99	43	134	44	134	22	40	16	16	22
		186	190	161	177	178	62	32	61	58	50	37	40	43	57	54

NOTE.—The Collisions during the Day in 1850 to 1855 cannot be separated from those
* During the 16 years ending 1865, only one case of collision has occurred between two Steam Ships when

Collision between a Steam Vessel and a Sailing Vessel.										Vessels breaking from Anchors or Moorings, and coming into collision.										Collision between Two Steam Vessels.																			
Steam Vessel under Way and Sailing Vessel at Anchor.										Sailing Vessel under Way and Steam Vessel at Anchor.										Both under Way.*																			
1856		1857		1858		1859		1860		1856		1857		1858		1859		1860		1856		1857		1858		1859		1860		1861		1862		1863		1864		1865	
Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.		
-	-	-	2	-	1	-	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1		
-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1		
1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1			
-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
-	1	1	-	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
1	-	-	-	-	-	-	-	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
2	-	-	1	-	-	3	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
-	2	-	-	-	1	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
-	-	-	1	-	3	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
4	5	2	7	1	11	1	6	4	6	-	-	-	-	1	-	-	-	-	-	10	19	3	14	5	19	10	16	25	37	-	3	3	8	1	2	6	6		
9		9		12		7		10		-		-		1		4				29		17		24	26		52		3	11	3		9		12				

which happened at Night, in consequence of the Inaccuracy of the Returns. one was under Way and the other at Anchor. That occurred in daylight in the month of October 1857.

Table 20. List of SANDS and ROCKS upon which Vessels were Stranded in the Seven Years 1859 to 1865 inclusive.

Name of Rock or Sand.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	Name of Rock or Sand.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Aberfraw Bank, Anglesea - -	-	-	1	-	-	-	-	Broken Bank, county Donegal - -	-	-	-	-	-	1	-
Abertay Sand, Forfarshire - -	1	-	2	1	-	1	-	Brys Rock, Belfast Lough - -	1	-	-	-	-	-	-
Ailsa Craig, Ayrshire - -	-	-	1	-	-	-	-	Buck Rock, Cornwall - -	-	1	-	-	-	-	-
Airds Bank, Dumfries - -	-	1	-	-	-	-	-	Bungar Bank, Sligo - -	1	-	-	-	-	-	-
Andrews Sand, Harwich - -	-	-	-	-	1	-	-	Burnet Wharf, Fleetwood - -	-	1	-	-	-	-	-
Annat Bank, River Esk - -	-	1	-	-	1	-	-	Burbo Bank, River Mersey - -	1	1	2	-	6	2	1
Arklow Bank, off Wicklow - -	2	4	-	2	2	3	3	Burcum Sand, River Humber - -	1	-	1	-	-	-	-
Arranman's Barrels, Argyleshire -	1	1	1	1	-	-	-	Burnham Flat, Norfolk - -	2	-	-	-	-	1	1
								Burr Island, county Down - -	-	-	-	-	-	2	-
Baggey Leap, Barnstaple Bay - -	-	-	-	-	-	1	1	Burrows Sand, Swansea - -	1	-	-	-	-	-	-
Bahama Bank, Isle of Man - -	2	-	-	-	-	-	-	Bus or Bush Rocks, Frazerburgh Harbour.	-	-	-	-	-	1	-
Ballyconnel Rocks, Donegal - -	-	-	-	-	-	-	1	Butter Lump Rock, county Down -	1	-	-	-	-	1	-
Ballycotton Island - -	-	-	-	-	-	-	1	Buxey Sand, Essex - -	-	-	-	-	2	-	-
Bally-mac-cotter Rocks, Cork - -	-	-	-	-	-	-	1								
Balmerena Bank, Tay - -	-	-	-	-	-	-	1	Cairnbulg Briggs, Frazerburgh - -	-	-	-	1	-	-	3
Banks Rocks, Isle of Man - -	-	1	-	-	-	-	-	Caistor Shoal, Norfolk - -	1	1	-	-	3	-	-
Barber Sand, Norfolk - -	1	6	1	4	1	3	4	Calve Island, Sound of Mull - -	-	-	-	-	-	-	1
Bar Flat, Lynn Deep - -	-	1	-	-	-	-	-	Cant Sand, Essex - -	1	-	-	-	-	-	-
Barn Scar, Cumberland - -	-	-	1	-	-	-	-	Cannon Rock, county Down - -	-	-	3	3	1	-	2
Barnard Sand, off Kessingland - -	-	-	1	2	3	-	-	Carig y Llong Rock, Anglesea - -	-	-	-	-	-	1	-
Barnard Wharf Sand, Fleetwood - -	-	3	1	2	-	1	1	Cardiff Sands, Glamorganshire -	2	-	-	-	-	-	-
Barnaugh Island, county Mayo - -	-	1	-	-	-	-	-	Carregonen Island, Pembroke - -	-	-	-	-	-	-	1
Barrels Rocks, off Carnsore Point -	-	-	-	-	-	1	-	Carrickassan Rocks, Cork - -	-	-	-	-	-	-	1
Barrow Sand, Essex - -	1	1	1	6	2	3	2	Carrig Rocks, Greenore Point, county Wexford.	-	1	1	-	-	-	-
Barry Sand, Forfarshire - -	-	1	-	-	-	-	-	Carrig Rocks, Bearhaven - -	1	-	-	-	-	-	-
Barry Island, Glamorganshire - -	1	-	-	-	-	-	-	Carrig Rocks, Isle of Man - -	1	-	-	-	1	-	-
Battery Rocks, see Tynemouth Rocks	-	-	-	-	-	-	-	Castellcock Rocks, Pembrokeshire -	-	1	-	-	-	-	-
Bay Sand, Wisbeach - -	-	-	1	-	-	-	-	Cefn Sedan Sands, Carmarthen - -	2	-	-	-	-	-	-
Beacon Rocks, Leith - -	-	-	-	1	-	-	-	Cheese Rock, Menai Straits - -	-	1	-	-	-	-	-
Beacon Rock, Hartlepool - -	-	-	-	1	-	-	-	Cherry Stone Rock, off Mumbles Head	-	-	-	-	-	1	-
Beasts of Holm, Stornoway - -	-	-	1	-	-	-	-	Chesil Beach, Dorset - -	1	1	-	-	1	-	-
Beggars Patch, Cheshire - -	-	-	-	-	1	-	-	Children's Rock, Cornwall - -	-	-	-	-	2	-	-
Beimar Rock, Fifehire - -	-	-	-	1	1	1	-	Chit Rock, Sidmouth - -	-	1	-	-	-	-	-
Belhaven Rocks, Haddingtonshire -	-	1	-	-	-	-	1	Clachlan Rock, Isle of Arran - -	1	-	-	-	-	-	-
Bembridge Ledge, Isle of Wight - -	-	-	-	-	1	-	1	Clare Island, county Mayo - -	1	-	-	-	-	-	-
Bendrick Rock, Ilfracombe - -	-	1	-	-	-	-	-	Clarks Wharf Sand, Morecambe Bay -	1	-	-	-	-	-	-
Bennets Bank, Dublin Bay - -	-	-	1	-	-	-	-	Cleat Rock, Hoy Sound, Galway - -	1	-	-	-	-	-	-
Berrow Bay Sands, Somerset - -	-	-	1	-	-	-	-	Cleeness Sands, Lincolnshire - -	-	1	1	-	1	-	-
Bink Sand, off Wells - -	1	-	-	-	-	-	-	Clestrain Skerries, near Stromness -	-	1	-	-	-	-	-
Birnie Rock, Fraserburgh - -	-	-	-	-	-	1	-	Clonchan Rocks, Whitehead, county Antrim.	-	1	-	-	-	-	-
Black Shore Sand, Norfolk - -	-	1	-	-	-	-	-	Coal Rock, Anglesea - -	-	-	-	1	-	-	-
Black Head, near Lizard - -	-	-	-	-	-	1	1	Coberon Rock, near Broadstairs - -	-	-	-	1	-	-	-
Black Horse Rock, Crookhaven - -	-	1	-	-	-	-	-	Cobles Reef, Plymouth Sound - -	-	-	-	-	-	1	-
Black Middens, see Tynemouth Rocks	-	-	-	-	-	-	-	Cockle Islands, county Down - -	-	-	-	-	-	-	-
Black Rock Sand, Louth - -	-	-	-	1	-	-	-	Cockle Sand, Norfolk - -	3	1	1	1	-	-	2
Black Rock, Ayrshire - -	-	1	-	-	-	-	2	Codling Bank, Wicklow - -	-	-	-	-	-	-	1
Black Rock, Falmouth - -	-	-	-	1	-	-	-	Coldingham Sands, Berwickshire -	-	-	-	-	-	1	1
Black Rock, Dundalk Bay - -	1	-	-	-	-	-	-	Columbine Bank, Whitstable - -	-	-	1	1	-	-	-
Black Rock, Wick - -	-	-	-	1	-	-	-	Coll Island, Argyleshire - -	-	1	1	-	1	-	-
Black Rock, Campbeltown - -	-	1	-	-	-	-	-	Conacosteen Rocks, Cork - -	-	-	-	1	-	-	-
Black Rock, Galway - -	1	-	-	-	1	-	-	Conchiel Reef, county Clare - -	-	1	-	-	-	-	-
Black Rock, Leith - -	1	-	-	-	-	-	-	Conister Rocks, Douglas - -	-	-	-	1	1	-	-
Black Rock, Sound of Islay - -	-	1	-	-	1	1	-	Connigbeg Rock, Coast of Ireland -	-	-	-	-	-	1	-
Black Rock, near Fifeness - -	-	1	-	-	-	-	-	Conger Rocks, Bristol Channel - -	-	-	1	-	-	-	1
Black Rock, off Youghal - -	-	-	-	-	-	1	1	Coomb Rocks, Start Bay - -	1	-	-	-	-	-	-
Black Tail Spit, Essex - -	-	2	-	1	1	-	-	Copeland Islands, county Down - -	1	-	-	-	-	-	1
Blackwater Bank, Wexford - -	2	3	3	1	-	4	-	Cork Sand, Essex - -	1	1	-	-	-	1	-
Blakeney Sands, Norfolk - -	3	-	2	6	4	5	2	Corml Mawr Sands, Caernarthen - -	-	-	-	-	-	-	1
Blackhall Rocks, Durham - -	1	1	1	-	-	-	-	Corton Sand, Suffolk - -	3	2	3	6	1	6	4
Blasquet Rocks, county Kerry - -	-	1	-	-	-	1	-	Covesea Skerries, Morayshire - -	-	-	-	-	-	2	-
Boarhills Rocks, St. Andrews - -	-	-	-	-	-	1	-	Cow and Calf Rocks, Dundrum Bay -	1	-	1	-	-	-	-
Boase Rocks, Cornwall - -	-	-	1	-	-	-	-	Cowleaze Chine, Isle of Wight - -	-	-	-	1	-	-	-
Boich Head Rocks, Fraserburgh - -	-	2	-	-	-	-	-	Crab Island, county Clare - -	1	-	-	-	-	-	-
Bondcar Buss Rock, Hauxley, Northumberland.	-	-	-	1	-	-	1	Crab Rocks, Isle of Wight - -	1	-	-	-	-	-	1
Boulder Bank, Sussex - -	1	1	-	1	1	-	-	Craig Rock, Ballywalter, county Down.	-	-	1	-	-	1	-
Boulmer Steel, Northumberland - -	-	2	2	2	-	1	-	Craig Island, near Mull, Argyleshire	-	-	-	1	-	-	-
Brake Sand, Kent - -	1	-	-	1	-	1	3	Cramond Island, Frith of Forth - -	1	-	-	-	-	-	-
Bran Sand, River Tees - -	-	7	1	-	1	-	-	Croft Bank Rock, Hartlepool - -	1	-	-	-	-	-	-
Braunton Sands, Devon - -	2	-	-	1	1	-	-	Cross Sand, Yarmouth - -	1	-	6	4	8	12	1
Brazil Bank, Liverpool - -	1	-	2	1	1	-	1	Crow Rock, Pembrokeshire - -	-	-	-	1	-	-	1
Brenksea Sand, Glamorganshire - -	-	-	2	1	-	2	1	Croyde Sands, N. Devon - -	-	-	-	1	-	-	-
Brethren Rocks, Lerwick - -	1	-	-	-	-	-	-	Cruden Scar, near Peterhead - -	-	-	-	1	-	-	-
Bricanes Point, Wexford - -	-	-	-	-	1	-	-	Culloden Rock, Dornoch Frith - -	-	-	-	-	-	1	-
Briggs Reef, Groomsport, county Down.	-	1	2	-	-	-	-	Currawnee Bank, Sigo - -	1	-	-	-	-	-	-
Briggs Rocks, Fifehire - -	-	-	1	-	-	-	-	Custom House Rock, Limerick - -	-	-	-	1	-	-	-
Briggs Rocks, near Inchkeith - -	-	-	-	-	1	-	-	Cutler Sand, Suffolk - -	-	-	-	2	-	2	-
Brist Rock, near Girvan - -	1	-	1	1	-	-	-	Cymmaren Rocks, Carnarvon Bay - -	-	-	-	1	-	2	-
Broad Carr Rocks, off Cresswell, Northumberland.	-	1	-	-	-	-	-								

Table 20—continued.

Name of Rock or Sand.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	Name of Rock or Sand.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Dasetly Sands, Lynn Deep -	1	-	-	-	-	-	-	Hasborough Sand, Norfolk -	10	6	7	8	3	10	13
Daunts Rock, Cork -	-	-	-	-	-	1	-	Hats and Barrels Rocks, Pembrokeshire -	-	-	-	-	-	1	1
Devar Island, Campbeltown -	-	-	-	-	1	-	-	Hauxley Rocks, Northumberland -	-	1	-	-	-	-	-
Dirleton Sands, Haddingtonshire -	-	-	1	-	-	-	-	Hayling Island, Sussex -	-	1	-	-	1	-	-
Docking Sand, Lincolnshire -	-	-	-	-	1	-	-	Heaps Sand, Essex -	1	1	-	-	2	-	-
Dog Head Sands, Skegness -	-	1	-	-	-	1	-	Heisker Island, North Uist -	-	-	-	1	1	-	-
Dogger Bank, Wexford -	-	2	-	-	1	-	1	Helwick Sand, Glamorganshire -	-	-	-	-	1	-	-
Dowsing Sand, Lincolnshire -	-	1	1	-	-	-	-	Helesay Sand, Hebrides -	-	-	-	1	-	-	-
Drum Sand, Firth of Forth -	-	-	-	-	-	-	1	Hendon Rock, Durham -	2	-	-	2	-	-	-
Drake's Island, Plymouth -	-	1	-	-	-	-	-	Hepburn Shoal, <i>see</i> Tynemouth Rocks -	-	-	-	-	-	-	-
Drumcliffe Spit, Sligo -	-	-	-	-	-	1	-	Herd Sand, Durham -	4	5	4	2	-	3	3
Duddon Bank, off Fleetwood -	-	1	-	-	-	-	1	Herriot Rock, off Inchkeith -	-	-	-	-	-	1	-
Dudgeon Sand, Norfolk -	-	2	-	-	-	-	-	Holm Sand, Suffolk -	12	4	2	2	3	2	2
Dulas Island, Anglesey -	-	1	-	-	1	3	-	Holmes Sand, Bristol Channel -	1	1	1	1	-	-	-
Dunball Sands, River Parrett -	-	-	-	-	1	-	-	Holy Island, Durham -	4	6	2	1	1	2	3
Dunnet Sands, Caithness -	1	1	-	-	-	-	-	Holy Island, Buteshire -	-	1	1	1	2	-	1
Dunroog Bank, near Whitehaven -	-	-	-	-	-	1	-	Home Head Sand, Stamford Channel -	-	-	-	-	-	1	-
Dursey Island, county Cork -	-	-	-	1	-	-	-	Hook Sand, Poole -	1	1	-	-	-	1	-
Dutchman's Bank, Anglesea -	-	-	1	-	-	-	1	Hooper Sand, off Pembrey -	-	-	-	2	-	-	-
Eagle Rock, Ardrossan -	-	-	-	1	-	-	-	Horse Sand, Southport -	2	1	-	-	-	2	-
Eagleshay Island, Orkneys -	1	-	-	-	-	-	-	Horse Island, county Cork -	-	-	-	1	-	-	-
East Much Rocks, Banff -	-	-	-	-	-	1	-	Horse Rock, Pembrokeshire -	-	1	-	-	-	-	-
East Pole Bank, Hants -	-	-	-	-	1	-	-	Horse Sand, Spithead -	-	-	-	-	-	1	-
East Rock, near the Eddystone -	-	-	-	-	1	-	-	Horse Shoe Island, Ayrshire -	-	-	1	1	-	-	-
East Winner, off Hayling -	-	-	-	-	-	1	-	Hoyle, East and West, Sands, River Mersey -	1	1	1	2	-	-	-
Ebb Stone, near Porthglais -	-	-	-	-	-	-	1	Huttoft Bank, Lincolnshire -	-	-	2	-	-	-	-
Elbow Bank, River Tay -	-	-	1	-	1	-	-	Inch Island, Dingle Bay -	-	-	1	-	1	-	-
Foligary Sands, Hebrides -	1	1	-	-	-	-	-	Inches Rock, near Ardrossan -	-	-	-	1	-	-	-
Eyeborough Rock, near Berwick -	-	-	-	1	-	1	-	Inch Rock, Frazerburgh -	-	-	1	-	-	-	-
Fastnet Rock, county Cork -	-	1	-	-	-	-	-	Inchkeith, Frith of Forth -	3	-	-	-	-	-	1
Fern Islands, Northumberland -	1	1	1	-	1	2	3	India Bank, Wicklow -	-	-	-	-	1	1	-
Ferrier Sand, Lynn Deep -	-	-	1	-	-	-	-	Innis Point, near Blackhalls, Durham -	-	3	-	-	-	-	-
Filey Brig, Yorkshire -	2	3	-	-	2	1	1	Innisbofin Island, county Donegal -	1	1	-	2	1	-	-
Filly Tail Rock, near Kettleness, Yorkshire -	-	-	-	-	1	-	-	Innisbofin Island, county Galway -	-	-	-	-	1	-	-
Finnis Rock, Isle of Arran, Galway -	1	-	-	-	-	-	-	Innisgort Island, county Mayo -	-	-	-	1	-	-	-
Flimston Head Rocks, Pembrokeshire -	-	-	1	-	-	-	-	Innislyre Island, county Mayo -	-	1	-	-	-	-	-
Foreland Ledge, Isle of Wight -	-	-	-	-	-	1	-	Innismakeera Island, county Donegal -	-	1	-	-	-	-	-
Foreness Rock, North Foreland -	-	-	-	2	-	2	1	Innis Murray Island, county Sligo -	-	-	-	1	-	-	-
Formby Spit, Lancashire -	-	-	-	-	3	-	-	Isle of May, Frith of Forth -	-	-	-	1	-	-	-
Foveran Sands, near Newburgh, Aberdeenshire -	-	-	1	-	-	-	-	Jordan Flats, Lancashire -	-	-	-	1	-	1	-
Freshwater Ledge, Dorset -	-	-	1	-	-	-	-	Kenfig Sand, Glamorganshire -	1	-	1	-	-	-	1
Frodda Island, Skye -	-	-	-	-	-	1	-	Kentish Knock, Essex -	3	4	3	10	2	4	5
Funical Rock, near Whitby -	-	-	-	-	1	-	-	Kettleness Steel, Yorkshire -	-	-	-	-	-	1	-
Fury Bank, Glamorgan -	-	-	-	-	-	1	-	Kimmeridge Ledge, Dorset -	-	-	2	-	-	-	-
Gaa Sand, River Tay -	-	-	-	3	-	-	-	Kincardine Rock -	-	-	-	-	-	-	1
Gabbard Sand, off Harwich -	-	1	-	-	-	-	-	Kings Sons Rocks, Ross-shire -	-	-	1	-	-	-	-
Gair Reef, near Aberayron -	-	-	-	-	-	1	-	King Williams Bank, Isle of Man -	-	-	-	-	1	-	-
Gallopers Sand, at mouth of River Thames -	1	-	-	2	1	-	2	Kinmining Rocks, Fifeness -	-	-	-	-	-	1	-
Garvin Island, county Donegal -	-	1	-	-	-	-	-	Kirkdale Bank -	-	-	-	-	-	-	1
Gigha Island, Argyshire -	1	1	-	1	-	-	-	Kish Bank, Dublin -	-	1	1	3	-	1	-
Girdle Rocks, Kincardineshire -	-	-	-	-	-	1	-	Knott, Lancashire -	-	-	-	-	1	-	-
Girdler Sand, River Thames -	-	1	2	1	3	2	-	Lady Island, Troon -	1	-	-	-	-	-	-
Glasgorman Bank, Wexford -	-	-	-	1	-	-	-	Law and Dove Cot Reef, near Dunbar, Haddingtonshire -	-	-	1	-	-	-	-
Glass Island, near Crinan -	-	-	-	1	-	-	1	Leigh Middle Sand, Essex -	-	-	-	-	1	-	-
Glenimore Island, Argyshire -	-	1	-	-	-	-	-	Leman and Ower Sand, off Norfolk -	1	2	3	2	3	4	3
Goat Island, Stornoway -	-	-	-	1	-	-	-	Leven Sands, Menai Straits -	1	-	-	-	-	-	-
Gold Island, Donegal -	-	-	-	-	1	-	-	Lingay Island, Barra Sound -	-	-	-	-	-	1	-
Goldstone Rock, near Holy Island, Durham -	-	1	-	-	4	-	-	Lings, off Kilmore, Wexford -	1	-	-	-	-	-	-
Goodwick Sands, Pembrokeshire -	-	-	-	-	1	-	-	Loather Rock, Pentland Frith -	-	-	-	1	-	-	-
Goodwin Sands, Kent -	7	9	11	6	12	5	7	Loch na Gaul, Arisaig, Inverness -	-	-	-	-	-	1	-
Goose Rock, Padstow -	-	-	-	-	1	-	-	Long Banks, Wexford -	-	-	-	2	-	2	-
Gore Sand, Kent -	-	-	-	1	-	-	-	Long Craig Rocks, Ardrossan -	-	-	-	-	-	1	-
Goswick Sand, Berwickshire -	1	-	-	-	-	-	-	Long Craig Rocks, Rattray Head -	-	-	1	-	-	-	-
Governor Rock, Falmouth -	-	-	-	-	-	1	-	Long Pladdy, near South Rock, county Down -	-	-	-	1	-	-	-
Gravel Patch, Somerset -	1	-	-	1	-	-	-	Long Rock, Ballywalter -	-	1	1	1	-	1	-
Green Island, Belfast Lough -	1	-	-	-	-	-	-	Long Rock, Cork -	-	-	-	-	-	-	1
Gunfleet Sand, at mouth of River Thames -	1	7	3	10	5	11	7	Long Sand, Essex -	8	8	8	17	10	12	5
Gwinnie Rock, near Deadman Point, Cornwall -	-	-	-	-	-	1	-	Long Sand, Lynn Well -	-	-	-	-	1	-	-
Hadston Rocks, Northumberland -	-	1	-	-	-	-	-	Long Scawr, Durham -	1	-	3	-	-	1	-
Haddock Bank, Cromer -	-	-	-	-	-	1	-	Longnose Rocks, Kent -	-	-	-	-	-	1	2
Hadsonscar Rock, off Hauxley -	-	-	-	-	-	1	-	Longships Rocks, Cornwall -	-	-	-	2	1	1	-
Hammonds Knoll, Norfolk -	-	-	1	-	-	-	1	Lossie Sands, near Lossiemouth -	-	-	-	-	-	1	-
Harry Furlongs Rocks, Anglesea -	1	-	1	-	-	-	-	Lowestoft Inner Shoal, Suffolk -	-	1	1	-	-	-	-
Harvey Rock, Fifeshire -	-	-	1	-	-	-	-	Lucifer Bank, Wexford -	-	-	-	1	-	-	-
								Luinga Island, near Arisaig, Inverness -	-	-	-	-	-	1	-
								Lunan Sands, Montrose -	-	1	-	-	-	-	-

Table 20.—continued.

Name of Rock or Sand.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	Name of Rock or Sand.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Mablethorpe Sands, Lincolnshire	-	-	1	-	-	1	-	Penrhyn Rock, near Holyhead	-	1	-	-	-	-	-
Mackintosh Rock, Frith of Forth	-	-	-	1	-	-	-	Pentland Skerries	-	-	-	-	1	-	-
Mad Wharf, Formby	-	-	-	-	1	-	-	Pentowyn Sands, Kidwelly	1	-	-	1	-	-	-
Maen Meet Rock, off Bardsey Island	-	-	-	-	-	1	-	Perran Sands, Northumberland	-	1	-	-	-	-	-
Magee Island, Lough Larne	1	-	-	-	-	-	-	Peveril Ledge, near Swanage	-	-	2	-	-	-	-
Maiden Rocks, county Antrim	1	-	-	-	-	-	-	Piper Sand, Norfolk	-	-	-	-	-	-	1
Maiden Rocks, Pembrokeshire	-	-	-	-	-	1	-	Pisgah Rock, Anglesea	-	1	-	-	-	-	-
Manacles Rocks, Cornwall	-	-	3	1	1	1	1	Pladda Island, Bute	-	-	-	-	1	1	-
Maplin Sand, Essex	4	1	2	1	1	1	1	Pladdy Lug Rock, Strangford	-	-	1	-	-	-	-
Margate Sands, Kent	-	-	2	-	1	1	-	Platters Rocks, Skerries, Anglesea	-	3	-	1	1	1	1
Marsden Rock, Shields	-	-	-	-	-	-	1	Platters Sand, off Landguard Fort, Suffolk.	1	-	-	1	-	1	-
Masons Island, Galway	-	-	1	-	-	-	-	Plough Rock, county Down	-	-	-	-	1	-	-
Matchcombe Sands, near Start Point	-	-	1	-	-	-	-	Plough Rock, near Holy Island, Durham.	-	-	-	-	1	-	1
Metal Man Rocks, Oyster Island, county Sligo.	-	-	-	1	-	-	-	Pole Sand, Chichester	-	3	-	-	-	-	-
Mew Island, county Down	-	2	2	-	-	-	1	Pole Sand, Teignmouth	1	-	-	-	-	-	-
Middle Patch Sand, Ayrshire	-	-	-	-	1	-	-	Pollard Sand, Whitstable	-	-	-	-	-	-	1
Middle Sand, River Humber	1	2	1	1	-	-	1	Poolbeg, Dublin Bay	-	-	1	-	-	-	-
Middle Sand, Essex	-	2	2	-	-	-	-	Porthcawl Sands, Glamorganshire	-	-	-	1	2	-	-
Middleton Sands, near Hartlepool, Durham.	2	3	17	1	-	-	-	Portheras Sand, Cornwall	-	-	-	1	-	-	-
Milan's Children's Rocks	-	-	-	1	-	-	-	Port Ling, Loch Hourn, Inverness	-	-	-	1	-	-	-
Milton Island	-	-	-	1	-	-	-	Poulin Sand, near Loch Inchar	-	-	1	-	-	-	-
Mixon Shoal, Glamorganshire	-	-	1	-	-	-	-	Praa Sand, Cornwall	-	-	-	1	-	-	-
Mizen Head Rocks	-	-	-	-	-	-	1	Proudfoot Rock, Wick	1	-	1	1	-	1	-
Monster Sand, Exmouth	-	-	-	-	-	1	-	Pulder Rock, Strangford	-	1	-	-	-	-	-
Morgan Sands, Glamorganshire	-	1	-	-	-	-	-	Pullagheeny Rocks, Sligo	-	-	-	1	-	-	-
Morrison's Rocks, County Down	-	-	1	-	-	-	-	Pye Sand, Essex	-	-	-	1	1	-	-
Morte Stones, North Devon	-	-	-	-	2	1	-								
Mount Batten Reef	-	-	-	1	-	-	-	Quarrel Sands, North Berwick	1	-	-	-	-	-	-
Mouse Sand, at mouth of River Thames.	1	-	-	-	1	-	-								
Muglin Rocks, Dublin	-	-	-	1	-	-	-	Ramsdale Scar, near Scarborough	-	-	-	-	-	1	-
Murcur Sands, Aberdeen	1	-	-	-	-	-	-	Rascert Burn, Dumfries	-	-	-	1	-	-	-
Myrass Island, county Cork	-	-	1	-	-	-	-	Rathlin Island, Antrim	-	-	-	-	-	1	1
								Redcar Rocks, Yorkshire	3	5	4	2	3	3	4
Nash Sand, Glamorganshire	-	1	2	2	-	1	-	Red Sand, near the Nore	-	-	-	-	-	1	2
Newarp Sand, Norfolk	1	-	-	-	1	-	-	Reef of River Sanday, Orkney	-	-	-	-	-	1	-
Newcome Sand, Norfolk	2	4	3	11	5	4	7	Rennies Rock, Devon	-	-	-	-	1	-	-
Newcome Patch, Gloucestershire	-	1	-	-	-	-	-	Rhoscolyn Cairn, Anglesea	-	1	-	-	-	-	-
Newgate Sand, Pembroke	-	-	-	-	-	-	1	Ridge Sand, Winterton	-	2	-	-	-	-	-
Newland Island, Padstow	-	-	1	-	-	-	-	Ridge Sand, Kent	-	1	-	-	-	-	-
Newton Rocks, Northumberland	2	-	1	-	-	-	-	Riff Bank, near Chanonry Point, Cromarty.	-	-	-	-	-	1	-
Newport Sands, Pembrokeshire	1	-	-	-	-	-	2	Ringstead Ledge, near Weymouth, Dorset.	-	-	-	1	-	-	-
Neyland Rock, Margate	-	-	-	-	-	-	1	Ring Rocks, Derbyhaven	1	-	-	-	-	-	-
Nore Sand, River Thames	1	-	2	-	-	4	-	Roar Sand, Kent	-	1	-	1	-	-	-
Norse Bank, Broadhaven Bay	-	-	-	-	-	1	-	Robin Rigg Sand Bank, Cumberland	-	-	1	-	-	-	-
North Bank, River Mersey	-	-	-	-	5	-	-	Rock Angus, Strangford	-	-	2	-	-	-	-
North Bank, Cloghy Bay	-	-	-	-	1	-	-	Rock Perch, near Soldier Point, Dundalk.	-	-	-	-	-	1	-
North Bull, Dundalk	-	-	-	-	-	1	-	Roe Island, Lancashire	-	-	-	-	-	-	1
North Carr Rock, Fifeshire	1	-	-	-	-	-	2	Roker Rocks, near Blyth	-	-	-	-	1	-	-
North Cotes Sand, Lincolnshire	-	1	-	-	-	-	-	Ross Sands, Northumberland	1	-	-	-	-	-	-
North Rock, county Down	-	1	1	-	-	1	-	Rose Sand, River Humber	-	1	-	-	-	-	-
North Rock, Gun Island, county Clare.	1	-	-	-	-	-	-	Rundlestone Rock, Cornwall	1	1	-	1	-	1	3
North Sand, Norfolk	-	-	3	-	-	1	5	Rusk Bank, county Wexford	-	-	-	-	-	1	-
North Sand, near Tenby	-	1	-	-	-	-	-	Ryde Sands, Isle of Wight	-	-	-	-	-	1	-
North Wharf Bank, Fleetwood	-	-	1	-	-	-	-	Ryhope Rocks, Durham	-	-	1	-	-	-	1
"O" Rock, near St. Ives	-	1	-	-	-	-	-	Saint John's Reef, Pentland Frith	-	-	-	2	-	-	-
Ocean Rock, Ballywalter	-	-	-	-	-	-	1	Saint Patrick's Causeway, Cardigan Bay.	-	-	1	-	-	-	-
Old Harry Ledge, Dorset	-	-	-	-	2	-	-	Salt Rocks, Strangford	-	-	-	-	-	1	-
Old Scar Bank, Morecambe Bay	1	-	-	-	-	-	-	Saltees Island, Wexford	-	-	-	-	-	1	-
Old Walls Rocks, near Appledore	-	-	-	-	-	-	1	Saltfleet Sands, Lincolnshire	-	-	-	3	-	-	2
Orange Bank, Carmarthenshire	-	-	-	1	-	-	-	Salthouse Bank, near Lytham	1	1	1	3	2	-	1
Orcombe Ledge, Dorset	-	-	-	1	-	-	-	Sand Bank, Ramsey	-	-	1	-	-	-	-
Oronsay Island, Argyleshire	-	-	1	-	-	-	-	Sand Bank, Rosslare	-	-	-	-	1	-	-
Outer Carr Rocks, off Newbiggin	-	-	-	-	1	-	-	Sand Hale Bank, Lincolnshire	-	1	3	-	-	1	1
Owers Rock, Sussex	1	-	-	1	-	2	2	Sanda Island, Campbeltown	5	-	-	-	-	1	3
								Sandwich Flats, Kent	-	-	-	-	-	1	1
Pabba Island, Stornoway	-	-	-	-	-	-	1	Saunton Sands, North Devon	-	-	-	-	-	1	2
Palas Rock, near Inchkeith	-	-	-	-	1	-	-	Scalaster Rock, Mull, Argyleshire	-	1	-	-	-	-	-
Pandora Sand, Lynn Deepes	-	-	-	-	-	1	-	Scaltcar Rock, near Redcar	-	-	-	1	-	-	-
Patch Sand	-	-	-	-	-	-	1	Scar Rock, Crawfords Bay	1	-	-	-	-	-	-
Paterson's Rocks, Island of Sanda	2	-	-	1	3	-	1	Scarlet Rock, Isle of Man	-	-	-	1	-	-	-
Patrick Bridge, near Saltees Islands	1	-	-	-	-	-	-	Scotston Brigs, Peterhead	-	-	1	-	-	-	1
Pea Sands, Berwickshire	-	-	-	-	1	-	-	Scougal Rocks, East of N. Berwick	-	-	-	-	-	1	-
Pebble Ridge, Devon	1	-	-	-	-	-	-	Scrabster Burn, near Thurso	-	-	-	1	-	-	-
Peffer Sands, Haddingtonshire	-	1	-	-	-	-	-	Scroby Sand, off Great Yarmouth	4	8	4	8	7	5	5
Pembrey Sands, Carmarthenshire	-	1	-	-	-	-	-	Seal Rock, Ayr Bay	-	-	-	-	-	-	1
Penan Sand, Cornwall	1	-	-	-	-	-	-	Seal Sand, Lynn Deepes	1	-	-	-	-	-	-
Pendine Sand, Pembrokeshire	-	-	-	1	-	-	-	Seaton Sands, Durham	1	2	3	-	-	-	-
Penlas Rock, Anglesea	-	-	1	-	-	-	-	Selker Rocks, Cumberland	-	-	-	-	-	-	1
Penny Steel, Yorkshire	-	1	-	-	-	-	-	Selsey Bill, Sussex	-	-	-	1	-	-	-
Penolver Rocks, St. Ives	-	1	-	-	-	-	-								
Penrhos Sands, Carnarvonshire	-	-	-	-	8	-	1								

Table 20.—*continued.*

Name of Rock or Sand.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	Name of Rock or Sand.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Seven Stones, Land's End - -	-	1	-	1	1	-	-	Tuskar Rock, Wexford - -	-	-	-	-	-	1	1
Sheep Island, Milford - -	-	-	-	-	-	-	1	Tyna Sands, Haddingtonshire -	-	1	-	-	-	-	-
Shell Wharf, near Lancaster -	-	1	-	-	-	-	-	Tynemouth Rocks, including the	5	1	1	2	-	5	3
Sherringham Shoal, Norfolk -	-	2	-	4	-	3	2	Black Middens and the Battery							
Shingles Rocks, Isle of Wight	-	1	-	2	3	-	2	Rocks, and Hepburn Shoal, North-							
Ship Rock, county Down - -	-	1	1	1	-	-	-	umberland.							
Shipwash Sand, Essex - -	4	9	3	5	3	3	5								
Shivering Sands, near Whitstable	-	-	1	-	-	-	-	Udder Rock, near Looe, Cornwall -	-	-	1	-	-	-	-
Shoeburyness Sands - -	-	-	-	-	-	-	3	Uppang Rocks, Whitby Roads - -	-	-	-	-	-	2	-
Sillicar Rocks, Berwick - -	-	-	-	-	-	-	1								
Sizewell Bank, Suffolk - -	8	4	2	5	4	1	1	Valentia Island, off Port Magee -	-	-	-	-	-	1	-
Skerindrick Reef, Inverness-shire	-	-	-	1	-	-	-	Varne Sand, Kent - -	1	-	-	-	-	-	-
Skerries, Anglesea - -	-	-	1	1	-	-	1	Vogue Sand, Cornwall - -	1	-	-	-	-	-	-
Skerries, Dublin - -	-	-	2	-	1	-	1								
Skerryvore Rocks, off Argyleshire	-	-	1	-	-	-	-	Wainfleet Sand, Lincolnshire - -	-	1	-	-	-	-	-
Skerweather Shoal, Glamorganshire	3	-	3	3	-	3	1	Wallace Rocks, near Roddens, county	-	-	1	-	-	-	-
Skomar Rock, Pembrokeshire -	-	-	1	-	-	-	1	Down.							
Skull Martin Rock, county Down	-	1	1	1	-	-	1	Walney Island, Lancashire - -	3	1	-	1	3	-	1
Sledges Rocks, Pembrokeshire -	-	-	1	-	1	-	-	Warden Ledge, Isle of Wight - -	1	-	-	-	-	-	-
Smalls Rocks, Pembrokeshire -	-	-	1	-	-	-	-	Warham Sand, Blakeney - -	-	-	1	-	-	-	-
Smith's Knoll, near Hasborough Sand	1	-	1	-	-	-	-	Wedge Sand - -	-	1	-	-	-	-	-
Smithwick Sand, Bridlington -	-	-	2	-	-	-	-	Welch Sands, Bristol Channel -	-	-	-	1	-	-	-
Souter Point, near Whitburn - -	-	-	2	3	-	1	1	Wells Sands, Norfolk - -	-	-	-	-	3	3	1
South Bank, River Tay - -	1	-	-	1	-	-	-	West Middle Bank, near Formby -	-	-	1	-	-	-	-
South Bishop's Rock - -	-	-	-	-	-	-	1	West Rocks, Harwich - -	1	2	1	1	-	-	-
South Busses Rock, Fraserburgh	1	-	-	-	-	-	-	West Spit, River Mersey - -	-	-	-	-	-	-	1
South Gare, River Tees - -	-	-	1	-	-	-	-	Westness Rocks, near Inverkeithing	-	-	-	-	-	1	-
Sovereign Islands, Cork - -	-	-	-	-	1	-	-	Whale Chine, Isle of Wight - -	-	-	-	1	-	-	-
Sow and Pigs Rocks, Blyth - -	-	1	1	-	-	1	-	Whalesey Skerries, Shetland Island	-	-	-	-	-	1	-
Stag Rock, Cornwall - -	-	1	-	-	-	1	1	Whistle Rock, Portinllaen - -	-	-	-	-	-	1	-
Stag Rock, near Castletown - -	-	-	1	-	1	-	-	Whitburn Steel, Durham - -	1	3	1	-	1	2	10
Stiff Key Sand, Norfolk - -	-	-	-	-	-	1	-	Whitby Sands and Rocks, Yorkshire	-	1	5	2	-	-	6
St. Kilda Island, Hebrides - -	-	-	-	-	-	1	-	White Bay Rocks, Cork - -	-	-	-	-	-	-	1
St. Mary's Rock, Douglas - -	-	-	-	-	-	1	-	White Rocks, near Portrush, county	-	-	-	-	-	1	-
Stone Bank, Lynn - -	-	-	-	-	1	-	-	Antrim.							
Stone Binks, Spurn Point - -	4	-	1	3	3	-	1	White Sand, Cardigan - -	1	-	-	-	-	-	-
String Rock, Kyleakin - -	-	-	-	-	1	-	-	White Steel, Durham - -	-	-	-	-	-	-	1
Stroma Skerries, Caithness - -	2	-	2	1	-	-	-	Whitehouse Bank, county Antrim	-	-	1	-	-	-	-
Sully Island, Glamorganshire -	1	1	1	1	-	-	-	Whitford Sands, Flintshire - -	-	-	-	-	1	-	-
Sunk Sand, Essex - -	-	2	2	1	1	1	2	Whiting Sand, Essex - -	1	3	1	2	-	1	-
Sunk Sand, River Humber - -	-	-	1	-	-	-	2	Whiting Sand, Norfolk - -	-	3	1	1	-	-	1
Swallow Bank, near New Romney	-	-	1	-	-	-	-	Whitley Sand, Northumberland	-	-	1	-	-	-	-
Swilley Rocks, Anglesea - -	-	-	-	-	-	1	-	Whitsand Bay Rocks, Cornwall -	-	3	-	-	-	-	-
Swilly Rock, county Donegal -	-	-	-	-	-	-	2	Whittaker Sand, Essex - -	2	1	1	2	-	1	-
Swin Sand, mouth of the Thames	-	-	-	-	-	-	-	Wildfire Rocks, Dunbar - -	-	-	-	-	-	-	1
Swona Island, Orkney - -	-	-	-	1	-	-	-	Willow Bank, Mounts Bay, Cornwall	-	-	-	-	1	-	-
								Winterton Ridge - -	-	-	-	-	-	-	1
Tara Reef, county Down - -	-	-	-	-	-	-	1	Wolf Rocks, Cornwall - -	-	-	1	-	-	-	-
Tarinsa Island, Sound of Harris	-	-	-	-	4	3	3	Wolley's Rocks - -	-	-	-	-	-	-	1
Taylors Bank, River Mersey - -	-	1	-	-	-	-	-	Wolves Rocks, Bristol Channel	1	1	-	1	-	2	3
Tetney Sand, Lincolnshire - -	-	-	1	1	-	-	1	Woolcombe Sands, North Devon -	1	-	-	-	-	-	-
Thief Sand, off Burnham, Norfolk	-	-	-	-	1	-	-	Woolpack Island, Lynn Deepes -	1	-	-	-	-	1	-
Toft Sand, Boston Deepes - -	-	-	-	-	1	-	-	Woolsons Bank, Hants - -	-	-	-	1	-	-	-
Tongue Sand, Kent - -	1	-	1	-	1	-	-	Woolsteners, off Hayling - -	-	-	-	-	-	-	2
Torrion Rocks, Mull, Argyleshire	-	-	1	-	-	-	-								
Tory Island, Donegal - -	-	1	-	1	-	-	-	Yaw Rock, Cornwall - -	1	-	-	-	-	-	-
Tours Reef, Durham - -	-	-	-	1	-	-	-								
Tout Rocks, Kincardine - -	-	-	-	-	-	-	1	Zimbra Flats, River Mersey - -	-	-	-	1	-	-	-
Towen Sands, Carmarthen - -	-	-	-	1	-	-	-								
Trinity Sand, River Humber - -	-	-	-	1	6	-	-	Total - -	243	272	267	298	239	260	273
Trow Rock, Durham - -	1	2	1	-	-	-	-								
Trunkhill Bank, near Southport, Lan-	-	-	-	-	-	1	-								
cashire.															
Tully Bank, Lancashire - -	-	-	-	-	1	-	-								
Tuns Bank, Londonderry - -	-	-	-	-	1	-	-								

P A R T II.

Table 21. Wrecks and Casualties for one Year occasioning LOSS OF LIFE, Chronologically arranged, from the 1st day of January to the 31st day of December 1865, inclusive, distinguishing the Description of each Vessel, Cargo, the Age of each Vessel, the Number of Lives Lost in each case, the Date and Place of each Casualty, and the Force and Direction of the Wind at the time each Casualty happened.

Date of Casualty.	Name of Ship and Age when known.	Rig.	Tons.	Men	Cargo.	Nature of Casualty, and whether resulting in Total Loss or Partial Damage.	No of Lives Lost.	Direction and Force of Wind.		Place.
								Direction	Force	
1865: 2 Jan. -	Lord Adolphus, unknown.	Schooner	63	4	Oats - -	Abandoned; total	1*	W.	9	Off the Fern Islands.
3 " -	Hippolyte, 3 years	Brig	202	10	Sugar -	Collision; partial -	1	—	—	In the Downs.
4 " -	Andrew Wilson, 29 years.	Schooner	76	5	Timber -	Stranded; total -	1	W.S.W.	4	Carr Rocks, off Fifeness.
5 " -	Fly, 12 years -	Brig	153	6	Ballast -	Struck by heavy Sea; partial.	1	S.	5	53° 45' N. 1° 20' E.
5 " -	Sea Gull, 19 years	Smack	31	4	Ballast -	Foundered; total -	4	Unkn.	10	Supposed on the Dogger Bank.
6 " -	Albion, 18 years -	Schooner	103	5	Coal -	Foundered; total -	5	N.W.	9	Supposed about 35 miles off St. Abb's Head.
6 " -	Elizabeth, 32 years	Brigant ^c .	96	5	Porter and 1 passenger.	Stranded; total -	6 incl ^s 1 pass.	N.W.	9	Brazil Bank, Rock Light bearing S.E., 2½ miles off.
6 " -	Fifeshire, 46 years	Smack	57	7	Ballast -	Foundered; total -	1	N.W.	9	E. of Great Silver Pits. Spurn Lights W.S.W. 140 miles.
6 " -	Laurel, 47 years -	Smack	40	11	Ballast -	Struck by heavy sea; partial.	1	W.N.W.	9	Spurn Lights W. by S. 140 miles.
6 " -	Water Witch, 23 years.	Smack	39	9	Ballast -	Foundered; total -	1	W.N.W.	9	Spurn Lights W. by S. 160 miles.
6 " -	Witch of the Wave, 13 years.	Smack	55	10	Ballast -	Struck by heavy seas; partial.	2	W.N.W.	9	Spurn Lights S.W. by W. 170 miles.
6 " -	Guide, 6 years -	Smack	39	5	Ballast -	Struck by heavy seas; partial.	1	W.N.W.	9	Spurn Lights W. by N. 90 miles.
7 " -	John and Jean, 20 years.	Sloop	50	2	Pig Iron -	Foundered; total -	2	W.N.W.	4	No. 2 Black Buoy, River Tees, Durham.
12 " -	Pauline, 6 months	Schooner	73	5	Coal -	Stranded; total -	1	S.S.W.	9	Ship Wash Sand.
13 " -	Henrietta, unknown	Sloop	31	5	Old Salt -	Stranded; total -	5	W.N.W.	7	Inside Hayle Bar.
13 " -	Meggie Armstrong, 2 years.	Brig	289	10	Coal -	Collision; partial -	1	—	—	Off South Foreland.
13 " -	Lerwick, 29 years	Schooner	55	6	Oats -	Loss of bulwarks; partial.	1	S.W.	9	Smalls Lighthouse, Pembroke.
14 " -	Sarah Ellen, unknown.	Schooner	86	5	Valonea -	Parted from cables; total.	5	N.W.	12	Caldy Roads, near Tenby.
14 " -	Glaucus, 14 years -	Brig	226	13	Cotton and Sugar.	Disabled; partial -	2	N.W.	10	50° 49' N. 11° W.
14 " -	Ellen Sophia, 10 years.	Brig	202	8	Rum and Sugar.	Stranded; total -	8	N.W.	10	Ballydavid Head, co. Kerry.
14 " -	Lelia, 1 year -	S. S.	431	48 and Pilot	Iron and Coal; 7 passengers.	Foundered; total -	51 viz., 44 crew and passengers and 7 of Life Boat	N.W.	9	Six Miles W. of the N.W. Light Ship, Liverpool.
14 " -	Ocean, 40 years -	Schooner	84	5	China Clay	Stranded; total -	2	W.S.W.	9	On the East Winner, off Hayling.
14 " -	Henry Holman, 13 years.	Brigant ^c .	158	8	Coal and Machinery.	Disabled; partial -	1†	W.N.W.	12	Holyhead Bay.
15 " -	Juanito, 13 years -	Brig	200	11	Sugar -	Stranded; total -	1	N.W. by W.	9	Stowe Cliff, 5 miles N. of Bude, Cornwall.
17 " -	Thomas and Margaret, 35 years.	Brig	176	6	Coal -	Collision; total -	1	—	—	One Mile distant from the Nore Light Ship.
17 " -	Margarets, 26 years	Schooner	52	3	Coal -	Stranded; total -	3	W.N.W.	9	Corsewall Point.
21 " -	Miranda and Fanny, 10 years.	Smack	33	5	Ballast -	Foundered; total -	5	Unkn.	Unkn.	Supposed near Silver Pits.
24 " -	Armenian, 10 years	S. S.	763	48	General, and 42 passengers.	Stranded; total -	8†	N.E.	4	Arklow Bank, co. Wicklow.
29 " -	Assaye, 11 years -	Ship	1,598	47	Cotton, and 1 passenger.	Stranded; total -	1	S. by W.	9	Ross Bay, co. Cork.
29 " -	Marquis of Anglesea, 39 years.	Smack	47	3	Coal -	Stranded; partial -	4	S.S.E.	9	Studwall's Roads, Carnarvon.

* A fisherman assisting.

† Of the Holyhead Life Boat crew.

‡ 2 crew, 2 passengers, and 4 of the crew of the Arklow Light Ship.

Table 21—continued.

Date of Casualty.	Name of Ship and Age when known.	Rig.	Tons.	Men	Cargo.	Nature of Casualty, and whether resulting in Total Loss or Partial Damage.	No. of Lives Lost.	Direction and Force of Wind.		Place.
								Direction	Force	
1865:										
29 Jan. -	Sextus, 10 years -	Barque	398	16	Indian corn	Stranded; total -	6	S.	11	Curragh Point, co. Waterford.
29 " -	Elizabeth, 24 years	Unk.	53	3	Coal -	Foundered; total -	3	S.E.	10	Off the Coast of Yorkshire.
30 " -	Panope, 25 years -	Brigant ^e	142	7	Cotton and sugar.	Foundered; total -	1	W.S.W.	4	Two miles S.S.E. of the Hook Tower.
30 " -	Stirlingshire, 18 years.	Barque	365	14	Sugar, molasses, and rum.	Stranded; partial -	6	W.N.W.	6	South Rock of Tuskar, co. Wexford.
30 " -	Giardiniera, unknown.	Barque	400	17	Bones and marble.	Stranded; total -	Sup ^d 17	S.W.	10	Inch Strand, near Dingle.
Jan. -	Sisters, 28 years -	Smack	46	7	Ballast -	Foundered (supposed); total.	7	—	—	Fishing ground, off Scarborough.
" -	Welkin, under 1 year.	Schooner	99	Unk. sup. 6	Ballast -	Foundered; total -	6	—	—	At Sea, between Garmouth and Sunderland.
" -	Christian, 24 years	Schooner	48	4	Coal -	Foundered; total -	4	Unkn.	Unk.	Supposed between Shields and Perth.
" -	Little Nell, unknown.	Unk.	146	5	Unknown -	Foundered; total -	5	Unkn.	Unk.	Off the North Foreland.
10 Feb. -	Odin, 1 year -	Brig	352	9	Salt -	Stranded; total -	9	Unkn.	Unk.	Supposed on the Kentish Knock.
10 " -	May Flower, 19 years.	Brigant ^e	112	5	Coal -	Stranded; total -	1	E.N.E.	5	Near the Middle Buoy of the Swin Sand.
11 " -	David, 25 years -	Schooner	50	3	Guano -	Stranded; total -	1	S.	10	$\frac{3}{4}$ of a mile N. of Aberdeen Pier.
18 " -	Malvinia, 29 years	Brig.	137	5	Unknown -	Foundered (supposed); total.	5	Unkn.	Unk.	Between Sunderland and Aberdeen.
19 " -	Band of Hope, 6 years.	Smack	61	10	Ballast -	Loss of sail and spar; partial.	1	N.N.W.	9	Dogger Bank, 170 miles E.N.E. of Spurn Lights.
19 " -	Maria, 5 years -	Smack	42	5	Fish -	Stranded; total -	4	N.N.W.	9	Holmpton, Yorkshire.
20 " -	General Havelock, 5 years.	Smack	54	9	Ballast -	Loss of spar, &c.; partial.	1	N.	9	Dogger Bank, 150 miles E.N.E. of the Spurn.
20 " -	Admiral, 24 years	Smack	60	9	Ballast -	Loss of sail and spar, &c.; partial.	4	N.N.E.	9	Dogger Bank, 160 miles E.N.E. of the Spurn.
20 " -	Thomas and Margaret, 8 years.	Yawl	30	9	Ballast -	Stranded; total -	9	N.N.W.	6	$\frac{1}{2}$ mile from Seaton, Durham.
21 " -	Rokeby, 5 years -	S. S.	218	18	General -	Foundered; total -	18	W.N.W.	9	Off New Quay, Cornwall.
26 " -	William, unknown	Lug	Unk.	8	Ballast -	Foundered; total -	8	Unkn.	Unk.	Supposed off Burghhead.
Feb. -	Newark, 1 year -	Smack	53	5	Fish -	Foundered; total -	5	Unkn.	Unk.	Supposed on the Dogger Bank.
4 Mar. -	Coast Guard, unknown.	Lug Sail.	—	5	Stores -	Foundered; total -	5	Unkn.	7	One mile N.W. of Lulworth Cove, Dorset.
6 " -	Magdalen Esther, unknown.	Schooner	104	6	Iron ore -	Loss of spars, &c.; partial.	1	N.N.W.	8	15 miles W. by N. of Walney.
6 " -	Sarah Stibbs, unknown.	Smack	30	4	Ballast -	Foundered; total -	4	N.N.W.	9	Left Plymouth on fishing voyage.
10 " -	Bethea, 32 years -	Brig	119	7	Iron ore -	Stranded; total -	2	N.W.	8	Between Dunroo and the two fathom banks.
19 " -	Victoria, 23 years	Sloop	56	3	General -	Stranded; partial	2	E.N.E.	9	Hemsby Beach, Norfolk.
19 " -	Burton, 33 years -	Brigant ^e	104	5	Coal -	Stranded; partial -	4	E.S.E.	9	End of North Pier, Tynemouth.
19 " -	Elizabeth, 40 years	Brig	147	6	Coal -	Stranded; total -	6	S.E.	9	Wildfire Rocks, Whitbury Ness.
19 " -	Greyhound, 8 years	Smack	15	4	Ballast -	Foundered (supposed); total.	4	E.	9	Off Hornsea Coast Guard Station, Yorkshire.
20 " -	Teazer, 11 years -	Schooner	86	5	Flour and 2 passengers.	Stranded; total -	4 of crew & 2 pas. 1	E.N.E.	8	North Bar of Wexford Harbour.
25 " -	Neptune, 28 years	S. S.	364	26	General and 6 passengers.	Collision; partial	1	—	—	Margate Roads.
26 " -	Guardian, 28 years	Brig	195	8	Coal -	Foundered; total -	7	E.N.E.	8	12 miles S.E. of Scarborough.
Mar. -	Olive Branch, 51 years.	Schooner	61	5	Slyme ore -	Foundered (supposed); total.	5	Unkn.	Unk.	Between St. Mawes and Runcorn.
" -	Lussin, unknown -	Barque	350	13	Wheat -	Foundered (supposed); total.	13	Unkn.	Unk.	At sea between Falmouth and Galway.
1 April	Remembrance, 17 years.	Brig	246	9	Coal -	Collision; partial -	1	—	—	Midway between the Spurn and Dudgeon.
5 " -	Eclipse, 7 years -	Barque	404	12	Ballast, and 2 passengers.	Stranded; total -	1	W. by S.	5	3 miles S.W. of Hartland Point, Devon.
6 " -	Hedley Vicars, 7 years.	Brig	228	9	Coal -	Collision; total -	1	—	—	Bar of the River Tyne.
29 " -	White, 4 years -	Schooner	141	6	Railway materials.	Foundered (supposed); total.	6	Unkn.	Unk.	Between Holyhead and London.
11 June -	West Kent, 3 years	Ketch	56	3	Super-phosphate and 1 passenger.	Foundered; total -	1	N.N.W.	6	4 miles N.E. of Cromer.

Table 21—continued.

Date of Casualty.	Name of Ship and Age when known.	Rig.	Tons.	Men	Cargo.	Nature of Casualty, and whether resulting in Total Loss or Partial Damage.	No. of Lives Lost.	Direction and Force of Wind.		Place.
								Direction	Force	
1865:										
June -	Catherine and Jane, 24 years.	Schooner	71	4	Wheat -	Foundered (supposed); total.	4	Unkn.	Unk.	Between Waterford and Dublin.
13 July -	Rose of Kent, 20 years.	Smack	10	5	Ballast -	Foundered; total -	1	S.W.	8	1½ mile N.N.E. of Scarborough' Castle.
27 „ -	Oread, 10 years -	S. S.	90	8	Ballast and 76 passengers.	Collision; partial -	1	—	—	Garrison Point, Sheerness.
10 Aug. -	Britannia, unknown	Yawl	16	4	Ballast -	Collision; partial -	1	—	—	10 miles S.S.W. of Staithes.
12 „ -	James, 22 years -	Schooner	74	4	Coal -	Dismasted; partial	1	S.S.E.	8	30 miles N.N.E. of the Fern Islands.
12 „ -	Novar, 38 years. -	Schooner	89	5	Coal -	Stranded; total -	5	E.	9	West entrance of the River Tay.
14 „ -	Thomas and Ann, 5 years.	Yawl	—	6	Ballast -	Collision; total -	1	—	—	Off Newton, Northumberland.
15 „ -	Name and age unknown.	Fishing boat.	Unk.	4	Ballast -	Stranded; total -	4	E.S.E.	9	East Side of Dunrossness, Shetland.
22 „ -	Shamrock, unknown.	Smack	28	2	Bricks -	Foundered; total -	1	S.	9	Between Ballycotton and Poorhead.
30 „ -	Charles Edward, 7 years.	Schooner	65	4	Iron ore -	Collision; total -	4	—	—	Off Bardsey.
8 Sept. -	Glenkins, 62 years	Schooner	70	3	Stone -	Stranded; total -	3	S.W.	9	Walney Island, Lancaster.
16 „ -	Falcon, 5 years -	S. S.	264	21	General and 250 passengers.	Collision; partial -	17 pas.	—	—	Off Whitecastle, Lough Foyle.
20 „ -	Abeona, 53 years -	Brig	148	6	Coal -	Collision; total -	1	—	—	20 miles E.S.E. of the Start.
27 „ -	William, 26 years	Schooner	66	4	Coal -	Stranded; total -	3	E.	8	About 3 miles N.W. by N. of Staithes, Yorkshire.
10 Oct. -	Ringwood, unknown.	Brig	96	5	Coal -	Stranded; total -	3	E.S.E.	9	Black Midden Rocks.
10 „ -	Medore, 26 years -	Brig	135	6	Coal -	Foundered; total -	6	E.S.E.	9	Entrance to the River Tyne.
10 „ -	Advice, 15 years -	Barque	224	8	Timber -	Stranded; total -	1	E.	9	Whitburn Rocks.
11 „ -	Paulita, unknown -	Brigant	240	12	Sugar -	Collision; total -	1	—	—	34 miles N.E. of the Tuskar.
13 „ -	Gleaner, 3 years -	Lugger	5	4	Mussels -	Foundered (supposed); total.	4	N.N.E.	7	Supposed between Blyth and Camboise.
13 „ -	Hope, 41 years -	Smack	34	2	Stones -	Foundered; total -	1	N.E.	2	Off Hurst.
17 „ -	Margaret, 10 years	Schooner	82	4	Coal -	Stranded; total -	4	N.E.	9	3 miles East of North Berwick.
17 „ -	Harcourt, 9 years -	Brig	211	8	Coal -	Stranded; total -	1	W. by N.	12	5 miles North of Berwick Harbour.
17 „ -	Friends, 20 years -	Smack	39	3	Ballast -	Stranded; total -	1	N.E.	9	3 miles S.E. of St. David's Head.
17 „ -	Henriette, unknown	Schooner	Unk.	7	Coal -	Stranded; total -	7	E.	9	Off Burnmouth.
17 „ -	Janet Allison, new	Brig	176	8	Coal -	Stranded; total -	7	E.N.E.	9	5 miles North of Berwick Harbour.
17 „ -	Fear Not, 24 years	Schooner	71	4	Jute and 1 passenger.	Stranded; total -	1	E.	9	North side of Eden River 3½ miles from St. Andrew's.
17 „ -	Ann -	Smack	8	4	Coal and 1 passenger.	Capsized; partial -	4	Unkn.	Unk.	Off Lamblash.
18 „ -	Emerald, 31 years	Schooner	295	7	Coal -	Stranded; total -	7	E.N.E.	9	3 miles North of North Sunderland Harbour.
18 „ -	Agnes, unknown -	Schooner	60	4	Pit props -	Stranded; total -	4	E.N.E.	9	3 miles South of Berwick.
18 „ -	Rapid, 20 years -	Schooner	85	6	Coal -	Stranded; total -	5	N.E.	9	Druridge, 7 miles South of River Coquet.
19 „ -	Elizabeth, unknown.	Schooner	Unk.	3	Unknown -	Foundered; total -	3	Unkn.	Unk.	Off Whitby.
19 „ -	Medora, 25 years -	Barque	211	5	Coal -	Stranded; total -	5	E.N.E.	9	Greenhill Rocks, 1½ miles S.S.W. of Flamboro' Castle.
22 „ -	Fairy, New -	Schooner	229	10	General -	Dismasted; partial	1	E.N.E.	9	Off St. Alban's Head.
24 „ -	Name unknown, unknown.	Boat	Unk.	2	Ballast -	Capsized (supposed); total.	2	N.E.	4	Off Barra Isle, Shetland.
24 „ -	Prince of Wales, 24 years.	Schooner	46	2	Ballast -	Stranded; partial -	1	W.	9	Near Redstones, Cheshire.
25 „ -	Georgina, 20 years	Barque	540	13	Deals and 1 passenger.	Stranded; total -	2	N.W.	11	Sandymouth, near Bude, Cornwall.
25 „ -	Hope, 20 years -	Barque	252	10	Iron, &c. -	Disabled; partial -	1	W. by S.	10	Off the Isle of Wight.
25 „ -	Walter Frederick, unknown.	Sloop	41	3	Coal -	Stranded; total -	3	N.N.E.	11	Cullen Bay, Banff.
26 „ -	Centaur, 27 years -	Schooner	146	7	Coal -	Stranded; total -	2	S.	9	Newcome Sand.
28 „ -	Providence, 17 years	Brig	97	6	Coal -	Stranded; total -	2	W.N.W.	9	Hayle Bar, Cornwall.
29 „ -	Ver, 4 years -	Lugger	22	10	Ballast -	Foundered; total -	10	S.S.W.	10	15 miles E. of Yarmouth.
29 „ -	Vulcan, unknown -	Smack	20	6	Ballast -	Stranded; total -	5	S.	9	Mouth of the River Boyne.
30 „ -	George, 15 years -	Unk.	43	3	Tiles -	Foundered; total -	3	Unkn.	Unk.	Near the Dudgeon Light-ship.
Oct. -	Robert Airy, unknown.	S.S.	15	Unk. sup. 5	Ballast -	Foundered (supposed); total.	5	Unkn.	Unk.	Off Whitby.

Table 21—continued.

Date of Casualty.	Name of Ship and Age when known.	Rig.	Tons.	Men	Cargo.	Nature of Casualty, and whether resulting in Total Loss or Partial Damage.	No. of Lives Lost.	Direction and Force of Wind.		Place.
								Direction	Force	
1865 :										
Oct. -	Eliza, unknown -	Brig	193	8	Coal -	Foundered (supposed); total.	8	Unkn.	Unk.	On her passage from Sunderland to Portsmouth.
" -	Betsey, 15 years -	Schooner	63	Unk. sup. 5	Unknown -	Foundered; total -	5	Unkn.	Unk.	On a voyage from Crail to Shoreham.
3 Nov. -	Murillo, unknown -	S.S.	Unk.	22	General, and 9 passengers.	Collision; total -	3	—	—	Between St. Margaret's Bay and the South Foreland.
14 " -	Totness, 40 years -	Schooner	49	4	Coal -	Stranded; total -	1 and Pilot	S.S.W.	6	Tout Rock, off Cowie Creek, 1 mile E.N.E. of Stonehaven, Kincardineshire.
15 " -	Ellen, unknown -	Schooner	70	3	Coal -	Foundered; total -	1	N.N.W.	9	25 miles N.E. of Buchanness.
16 " -	Sarpedon, 5 years -	Barque	566	18	General, and 2 passengers.	Loss of spar, &c.; partial.	1	S.S.W.	9	Holyhead Bay.
17 " -	Sarah Jane, unknown.	Sloop	47	2	Timber, and 4 passengers.	Stranded; total -	6 2 of crew & 4 pass.	Unkn.	Unk.	Comah, near Manghold Head, Isle of Man.
17 " -	Maria, 40 years -	Schooner	53	4	Oil cake, and 1 passenger.	Collision; total -	4	—	—	4 miles E.N.E. of the North Sand Head.
21 " -	Virginie, 12 years -	Lugger	23	4	Potatoes -	Stranded; total -	3	S.W.	9	Chapman's Poole, near St. Alban's Head.
22 " -	Albion, 27 years -	Cutter	25	4	Ballast -	Loss of sails, &c; partial.	1	S.W.	12	About six miles E.N.E. of Lundy Island.
22 " -	Emmanuel, 7 years	Brig	169	8	Timber -	Stranded; total -	1	S.W.	12	Chisel Cove, West Bay, Portland, Dorset.
22 " -	Alpha, 6 months -	Brig	256	12	Fruit (dry) -	Loss of mast, &c.; partial.	2	S.W.	12	Scilly, N.W. by N. 30 miles.
22 " -	Favourite, 19 years	Brig	277	10	Palm oil, &c.	Stranded; total -	10	W.	10	Blackpool Pier, bearing W.S.W., distant a half mile.
24 " -	William, 8 years -	Barque	325	11	Wheat -	Stranded; total -	2	W.S.W.	12	Porthleven Harbour.
24 " -	Tobaco, 2 years -	Brigant	186	8	Logwood -	Stranded; total -	1	S.S.W.	11	1 mile E. of Penzance.
24 " -	Santista, 1 year -	Barque	300	17	Coffee and cotton.	Stranded; total -	15	S.W.	12	Gunwallow Fishing Cove.
24 " -	Constance, 24 years	Lugger	49	4	Barley -	Stranded; total -	2	S.W.	10	Lanlivete Bay, Cornwall.
25 " -	Elpis, 11 years -	Brig	263	11	Coal -	Stranded; total -	9	S. by E.	10	Nash Combe, Glamorganshire.
25 " -	Mary, unknown -	Sloop	35	3	Stone, coal, & cement.	Stranded; total -	1	S.S.E.	10	800 yards S. of the South Sand, Tenby.
26 " -	Shamrock, unknown.	Sloop	15	2	Meal, &c. & 1 passenger.	Stranded; total -	1	N.	9	Talmin Bay, Sutherlandshire.
26 " -	Osprey, 3 years -	Sloop	15	3	Unknown -	Stranded; total -	3	Unkn.	12	Newtown, Buckie, Banff.
28 " -	Saucy Lass, 11 years.	Lugger	29	11	Herrings -	Collision; total -	2	—	—	23 miles E. of Yarmouth.
28 " -	Susan, 13 years -	Dandy	46	4	Creosote -	Stranded; total -	3	N.	8	Off Newquay, Trevoze Head, bearing E.S.E. 8 miles distant.
29 " -	Quiver, unknown -	Unk.	116	6	Unknown -	Loss of spar, &c.; partial.	1	Unkn.	Unk.	20 miles S. by W. of Portland.
Nov. -	Resolution, 55 years.	Schooner	49	4	Oats -	Foundered (supposed); total.	4	Unkn.	Unk.	Supposed near the Land's End.
" -	Recruit, 8 years -	Schooner	53	5	Staves and ballast, and Master's wife.	Foundered (supposed); total.	6	Unkn.	Unk.	Between Peterhead and Lerwick.
" -	Chevy Chase, 14 years.	Unk.	341	11	Coal -	Foundered (supposed); total -	11	Unkn.	Unk.	Between the Isle of Wight and Swanage.
" -	A boat belonging to the Argo of Fayal.	Unk.	Unk.	11	—	Capsized; total -	11	Unkn.	9	Off Porthcawl.
3 Dec. -	Louisa, unknown -	Unk.	About 50	8	Ballast -	Collision; total -	2	—	—	About 5 miles E. of the South Sand Head Light-ship.
6 " -	Princess, unknown	Schooner	95	5	Jute -	Stranded; total -	5	S.E.	10	Mouth of River Tay.
6 " -	Barbadian, 9 years	S.S.	724	35	General, and 4 passengers.	Stranded; total -	14	S.W.	9	Blackwater Bank, co. Waterford.
7 " -	Patientia, 40 years -	Brig	213	8	Coal -	Leaky; partial -	1	S.E.	9	About 4 miles S.W. of Sumburghhead Light, Shetland.
11 " -	Volunteer, 3 years	Schooner	134	6	Coal -	Collision; total -	4	—	—	Off Trevoze Head.
13 " -	Samphire, 4 years -	S.S.	191	19	General, and 78 passengers.	Collision; partial -	5	—	—	Off Dover.
14 " -	Margaret, 5 years -	Cutter	41	4	Ballast -	Collision; total -	1	—	—	3 miles S.S.E. of Lambay Island.
14 " -	Nancy, unknown -	Sloop	30	3	Coal, and 1 passenger.	Stranded; total -	3 2 of crew & 1 pass.	N. to N.N.E.	9	Near Runswick, Yorkshire.

Table 21—continued.

Date of Casualty.	Name of Ship and Age when known.	Rig.	Tons.	Men	Cargo.	Nature of Casualty, and whether resulting in Total Loss or Partial Damage.	No. of Lives Lost.	Direction and Force of Wind.		Place.
								Direction	Force	
1865: 18 Dec. -	Noel, 11 years -	Brigant ^e	135	8	Fish and seal skins.	Stranded; total -	1	S.	8	Island of Tyree, co. of Argyle.
21 " -	Ibis, 5 years -	S.S.	608	24	General, and 16 passengers.	Stranded; total -	16	S.W.	6 to 7	$\frac{3}{4}$ mile S. of Ballycro-neen, C.G. Station.
22 " -	Mohawk, 23 years	Brig	154	Unk. sup. 10	Palm oil -	Foundered (supposed); total -	10	Unkn.	12	Supposed off the Skelligs, on the West Coast of Ireland.
25 " -	Tenasserim, 4 years	Ship	1,002	36	General -	Stranded; total -	2	S.S.W.	10	Arklow Bank.
25 " -	Lexinton, 9 years -	Barque	344	11	Coal, and 3 passengers.	Foundered; total -	1	S.S.W.	9	Off Coll, Argyleshire.
27 " -	Jane, unknown -	Smack	18	2	Culm -	Foundered (supposed); total -	2	S.W.	9	Supposed off St. Gowan's Head.
29 " -	Eugenie, 10 years -	Ship	1,136	25	General -	Stranded; total -	13	S.W.	10	Ballymaccotten Rocks, co. Cork.
29 " -	Princess of Wales, 3 years.	Brigant ^e	167	10	Rum, sugar, &c., and 1 passenger.	Stranded; total -	1	W.S.W.	10	Sandgate, Kent.
30 " -	Elizabeth, 9 years	Brig	178	9	General -	Stranded; total -	4	S.W.	10	Near Gollen Head, co. Galway.
30 " -	Otter, new -	Barque	327	9	Petroleum -	Stranded; total -	1	W. $\frac{1}{4}$ S.	9	Near Mulranny, co. Mayo.
31 " -	Bermuda, new -	Ship	677	20	Coal, &c. -	Stranded; total -	1	S.	10	Watersay, Island of Barra.
31 " -	Senhouse, 11 years	Brig	133	5	Ballast -	Stranded; total -	1	S.W.	11	Near Castletown, Isle of Man.
31 " -	Guy Mannering, 15 years.	Ship	1,610	32	Cotton and grain.	Stranded; total -	18	W.	10	Island of Iona, co. of Argyle.
31 " -	Palmar, unknown -	Unk.	Unk.	8	Logwood. & 2 passengers.	Stranded; total -	3	Unkn.	Unk.	Near Oban.
31 " -	Isabella, 26 years -	Schooner	145	5	Coal -	Stranded; total -	sup ^d 3	W.	10	Near Westhaven.

SUMMARY of TABLE 21.

—	Total Losses.							Partial Damage.							Vessels with Cargo.							Vessels in Ballast.							
	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	
Collisions	-	12	18	17	17	14	30	12	6	4	3	6	4	1	8	17	21	16	20	16	17	15	1	1	3	2	1	10	5
Strandings	-	83	47	84	56	35	29	71	10	11	10	4	6	3	5	80	47	83	53	33	25	68	10	10	11	6	6	6	7
Founderings	-	40	30	57	36	60	32	46	1	1	-	-	-	1	-	3	22	49	30	39	24	28	3	6	5	6	17	5	13
Other Causes	-	4	10	6	6	11	5	2	17	14	23	21	21	7	20	21	19	25	21	22	9	13	-	5	4	5	9	3	8
Totals	-	139	105	164	115	120	96	131	34	30	36	31	31	12	33	157	109	173	124	110	75	124	14	22	23	19	33	24	33

—	Whether with Cargo or in Ballast, Unknown.						Total Ships.						Total Hands on Board.						Total Lives Lost.									
	1859.	1860.	1861.	1862.	1863.	1864.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	
Collisions	-	-	-	1	1	1	18	22	20	23	18	31	20	216	136	156	172	140	220	192	59	72	89	54	41	91	53	
Strandings	-	3	1	-	1	2	1	93	58	94	60	41	32	76	1,691	463	739	578	278	243	708	1,337	241	420	338	140	171	335
Founderings	-	5	3	3	-	4	4	41	31	57	36	60	33	46	252	156	319	258	401	212	313	216	140	292	231	382	216	275
Other Causes	-	-	-	-	1	1	-	21	24	29	27	32	12	22	664	165	272	307	272	222	178	35	84	83	67	57	38	35
Totals	-	8	4	4	3	8	9	173	135	200	146	151	108	164	2,823	920	1,486	1,315	1,091	897	1,391	1,647	537	884	690	620	516	698

Table 22. Wrecks and Casualties (exclusive of Collisions) occasioning LOSS OF LIFE (geographically arranged) from the 1st day of January to the 31st day of December 1865, inclusive; distinguishing the Description of each Vessel, Cargo, the Age of each Vessel, the Number of Lives Lost in each Case, the Date and Place of each Casualty, and the Force and Direction of the Wind at the Time each Casualty happened.

Date.	Name of Ship, and Age when known.	Description of Vessel.	Tons.	Men.	Port sailed from.	Port bound to.	Cargo.	Nature of Casualty, and whether resulting in Total Loss or Partial Damage.	No. of Lives Lost.	Wind.		Place.
										Direction.	Force.	
Fern Islands to Flamborough Head.												
2 Jan.	LordAddolphus	Schooner	63	4	Gardenstown	London -	Oats -	Abandoned; total -	1 a fisherman assisting.	W.	9	Off the Fern Islands.
7 Jan.	John & Jean, 20 years.	Sloop	50	2	Middlesboro'	Newcastle	Pig iron -	Foundered; total -	2	W.N.W.	4	No. 2 Black Buoy, River Tees, Durham.
— Jan.	Christian, 24 years.	Schooner	48	4	Shields -	Perth -	Coal -	Foundered; total -	4	Unknown		Supposed between Shields and Perth, ½ mile from Seaton, Durham.
20 Feb.	Thomas & Margaret, 8 years.	Yawl	30	9	Whitby -	Fishing voyage.	Ballast -	Stranded; total -	9	N. & W.	6	½ mile from Seaton, Durham.
19 Mar.	Burton, 33 years.	Brigant ^e	104	5	Shields -	London -	Coal -	Stranded; partial -	4	E.S.E.	9	End of North Pier, Tynemouth.
26 Mar.	Guardian, 28 years.	Brig	195	8	Newcastle -	Rotterdam	Coal -	Foundered; total -	7	E.N.E.	8	12 miles S.E. of Scarborough'.
13 July	Rose of Kent, 20 years.	Smack	10	5	Grimsby -	Fishing voyage.	Ballast -	Foundered; total -	1	S.W.	8	½ mile N.N.E. of Scarborough' Castle.
27 Sept.	William, 26 years.	Schooner	66	4	Hartlepool -	Gravesend	Coal -	Stranded; total -	3	E.	8	About 3 miles N.W. and by N. of Staithes, Yorkshire.
10 Oct.	Ringwood, unknown.	Brig	96	5	Seaham -	Yarmouth	Coal -	Stranded; total -	3	E.S.E.	9	Black Midden Rocks.
10 Oct.	Medore, 26 years.	Brig	135	6	Shields -	Harburg	Coal -	Foundered; total -	6	E.S.E.	9	Entrance to the River Tyne.
10 Oct.	Advice, 15 years.	Barque	224	8	Riga -	London -	Timber -	Stranded; total -	1	E.	9	Whitburn Rocks.
13 Oct.	Gleaner, 3 years.	Lugger	5	4	Hartlepool -	Newbiggin	Mussels -	Foundered (supposed); total.	4	N.N.E.	7	Supposed between Blyth and Camboise.
18 Oct.	Emerald, 31 years.	Schooner	295	7	Sunderland	Hamburg	Coal -	Stranded; total -	7	E.N.E.	9	3 miles N. of N. Sunderland Harbour.
18 Oct.	Rapid, 20 years.	Schooner	85	6	Sunderland	Christiana	Coal -	Stranded; total -	5	N.E.	9	Druridge, 7 miles S. of River Coquet.
19 Oct.	Elizabeth, unknown.	Schooner	Unk.	3	Unknown -	Unknown	Unknown	Foundered; total -	3	Unknown		Off Whitby.
— Oct	Robert Airy, unknown.	S.S.	15	Unk. sup. 5	Newcastle -	Whitby -	Ballast -	Foundered (supposed); total.	5	Unknown		Off Whitby.
14 Dec.	Nancy, unknown.	Sloop	30	3	Hartlepool -	Staithes -	Coal & 1 passenger	Stranded; total -	3	N. to N.N.E.	9	Near Runswick, Yorkshire.
					Cargo.	Ballast.	Un-known.	Total.	Partial.			
TOTAL -			17	1,451	92	13	3	1	16	1	68	
Flamborough Head to the North Foreland.												
12 Jan.	Pauline, 6 months.	Schooner	73	5	Newcastle -	Portugal	Coal -	Stranded; total -	1	S.S.W.	9	Ship Wash Sand.
29 Jan.	Elizabeth, 24 years.	Unk.	53	3	Saundersfoot	Waterford	Coal -	Foundered; total -	3	S.E.	10	Off the coast of Yorkshire.
10 Feb.	May Flower, 19 years.	Brigant ^e	112	5	Shields -	Whitstable	Coal -	Stranded; total -	1	E.N.E.	5	Near the middle buoy of the Swin Sand.
10 Feb.	Odin, 1 year	Brig	352	9	Cagliari -	Bergen -	Salt -	Stranded; total -	9	Unknown		Supposed on the Kentish Knock.
19 Feb.	Maria, 5 years.	Smack	42	5	North Sea Fishery.	Grimsby -	Fish -	Stranded; total -	4	N.N.W.	9	Holmpton, Yorkshire.
19 Mar.	Victoria, 23 years.	Sloop	56	3	London -	Selby -	General -	Stranded; partial -	2	E.N.E.	9	Hensby Beach, Norfolk.
19 Mar.	Greyhound, 8 years.	Smack	15	4	Grimsby -	Fishing voyage.	Ballast -	Foundered (supposed); total.	4	E.	9	Off Hornsea Coastguard Station, Yorkshire.
11 June	West Kent, 3 years.	Ketch	56	3	Alnmouth -	London -	Super-phosphate and 1 pass.	Foundered; total -	1	N.N.W.	6	4 miles N.E. of Cromer.
19 Oct.	Medora, 25 years.	Barque	211	5	Sunderland	Hamburg	Coal -	Stranded; total -	5	E.N.E.	9	Greenhill Rocks, 1½ miles S.S.W. of Flamboro' Castle.
26 Oct.	Centaur, 27 years.	Schooner	146	7	Newcastle -	Topsham	Coal -	Stranded: total -	2	S.	9	Newcome Sand.
29 Oct.	Ver, 4 years	Lugger	22	10	Yarmouth -	Fishing voyage.	Ballast -	Foundered; total -	10	S.S.W.	10	15 miles E. of Yarmouth.
30 Oct.	George, 15 years.	Unk.	43	3	Grimsby -	London -	Tiles -	Foundered; total -	3	Unknown		Near the Dudgeon Light-ship.
					Cargo.	Ballast.	Un-known.	Total.	Partial.			
TOTAL -			12	1,181	62	10	2	-	11	1	45	

Wrecks and Casualties (exclusive of Collisions) occasioning Loss of Life (geographically arranged), from the 1st January to the 31st December 1865, inclusive—*continued*.

Date.	Name of Ship, and Age when known.	Description of Vessel.	Tons.	Men.	Port sailed from.	Port bound to.	Cargo.	Nature of Casualty, and whether resulting in Total Loss or Partial Damage.	N ^o . of Lives lost.	Wind.		Place.
										Direction.	Force.	
North Foreland to St. Catherine's Point.												
14 Jan.	Ocean, 40 years.	Schooner	84	5	Fowey	Newcastle	China Clay	Stranded; total	2	W.S.W.	9	On the East Winner, off Hayling.
— Jan.	Little Nell, unknown.	Unknown	146	5	Llanelly	Colchester	Unknown	Foundered; total	5	Unknown		Off the North Foreland.
25 Oct.	Hope, 20 years	Barque	252	10	London	Alexandria	Iron, &c.	Disabled; partial	1	W. by S.	10	Off the Isle of Wight.
29 Dec.	Princess of Wales, 3 years.	Brigant ^a	167	10	George Town	London	Rum, sugar, &c., and 1 passenger.	Stranded; total	1	W.S.W.	10	Sandgate, Kent.
TOTAL			4	649	30	Cargo.	Ballast.	Un-known.	Total.	Partial.	9	
						3	—	1	3	1		
St. Catherine's Point to Start Point.												
4 Mar.	Coast Guard	Lug sail	—	5	Weymouth	Warbarrow	Stores	Foundered; total	5	Unk.	7	One mile N.W. of Lulworth Cove, Dorset.
13 Oct.	Hope, 41 years.	Smack	34	2	Swanage	Hurst Castle.	Stones	Foundered; total	1	N.E.	2	Off Hurst.
22 Oct.	Fairy, new	Schooner	229	10	London	Siam	General	Disasted; partial	1	E.N.E.	9	Off St. Alban's Head.
21 Nov.	Virginie, 12 years.	Lugger	23	4	Paimpol	Poole	Potatoes	Stranded; total	3	S.W.	9	Chapman's Poole, near St. Alban's Head.
22 Nov.	Emmanuel, 7 years.	Brig	169	8	Rouen	Ferrol	Timber	Stranded; total	1	S.W.	19	Chisel Cove, West Bay, Portland, Dorset.
29 Nov.	Quiver, unknown.	Unknown	116	6	London	St. Michael's	Unknown	Loss of spar, &c.; partial.	1	Unknown		20 miles S. by W. of Portland.
— Nov.	Chevy Chase, 14 years.	Unknown	341	11	Shields	Carthagera	Coal	Foundered (supposed); total.	11	Unknown		Between the Isle of Wight and Swanage.
TOTAL			7	912	46	Cargo.	Ballast.	Un-known.	Total.	Partial.	23	
						6	—	1	5	2		
Start Point to Land's End.												
24 Nov.	William, 8 years.	Barque	325	11	Odessa	Falmouth	Wheat	Stranded; total	2	W.S.W.	12	Porthleven Harbour.
24 Nov.	Tobeco, 2 years.	Brigant ^a	186	8	Tobasco	Hamburg	Logwood	Stranded; total	1	S.S.W.	11	1 mile E. of Penzance.
24 Nov.	Santista, 1 year.	Barque	300	17	Santos	Havre	Coffee & cotton.	Stranded; total	15	S.W.	12	Gunwallow Fishing Cove.
24 Nov.	Constance, 24 years.	Lugger	49	4	St. Malo	Cardiff	Barley	Stranded; total	2	S.W.	10	Lanlivete Bay, Cornwall.
TOTAL			4	860	40	Cargo.	Ballast.	Un-known.	Total.	Partial.	20	
						4	—	—	4	—		
Land's End to Hartland Point, including Scilly.												
13 Jan.	Henrietta	Sloop	31	5	St. Ives Pier	Hayle for shelter.	Old salt	Stranded; total	5	W.N.W.	7	Inside Hayle Bar.
15 Jan.	Juanito, 13 years.	Brig	200	11	Cardenas	Greenock	Sugar	Stranded; total	1	N.W. by W.	9	Stowe Cliff, five miles N. of Bude, Cornwall.
21 Feb.	Rokeby, 5 years.	S.S.	218	18	Glasgow	Oporto	General	Foundered; total	18	W.N.W.	9	Off New Quay, Cornwall.
5 April	Eclipse, 7 years.	Barque	404	12	London	Swansea	Ballast & 2 passengers.	Stranded; total	1	W. by S.	5	Three miles S.W. of Hartland Point, Devon.
25 Oct.	Georgina, 20 years.	Barque	540	13	Archangel	Cardiff	Deals and 1 passenger.	Stranded; total	2	N.W.	11	Sandymouth, near Bude, Cornwall.
28 Oct.	Providence, 17 years.	Brig	97	6	Cardiff	St. Malo	Coal	Stranded; total	2	W.N.W.	9	Hayle Bar, Cornwall.
28 Nov.	Susan, 13 years.	Dandy	46	4	Gloucester	St. Ives	Creosote	Stranded; total	3	N.	8	Off New quay, Trevoze Head, bearing E.S.E. 8 miles distant.
30 Nov.	Resolution, 55 years.	Schooner	49	4	Cork	Portsmouth	Oats	Foundered (supposed); total.	4	Unknown		Supposed near the Land's End.
TOTAL			8	1,585	73	Cargo.	Ballast.	Un-known.	Total.	Partial.	36	
						7	1	—	8	—		

Wrecks and Casualties (exclusive of Collisions) occasioning Loss of Life (geographically arranged), from the 1st January to the 31st December 1865, inclusive—*continued*.

Date.	Name of Ship, and Age when known.	Description of Vessel.	Tons.	Men.	Port sailed from.	Port bound to.	Cargo.	Nature of Casualty, and whether resulting in Total Loss or Partial Damage.	No. of Lives lost.	Wind.		Place.
										Direction.	Force.	
Hartland Point to St. David's Head.												
13 Jan.	Lerwick, 29 years.	Schooner	55	6	Wexford	Gloucester	Oats	Loss of bulwarks; partial.	1	S.W.	9	Smalls Light House, Pembroke.
14 Jan.	Sarah Ellen	Schooner	86	5	Bridgewater	Cork	Valonea	Parted from cables; total.	5	N.W.	12	Caldy Roads, near Tenby.
17 Oct.	Friends, 20 years.	Smack	39	3	Aberdeen	Milford	Ballast	Stranded; total	1	N.E.	9	3 miles S. E. of St. David's Head.
22 Nov.	Albion, 27 years.	Cutter	25	4	Pill	(Cruising)	Ballast	Loss of sails, &c.; partial.	1	S.W.	12	About 6 miles E.N.E. of Lundy Island.
25 Nov.	Mary, unknown.	Sloop	35	3	Lydney	Cardigan	Stone, coal, and cement.	Stranded; total	1	S.S.E.	10	800 yards S. of the South Sand, Tenby.
25 Nov.	Elpis, 11 yrs.	Brig	263	11	Cardiff	Bahia	Coal	Stranded; total	9	S. by E.	10	Nash Combe, Glamorgan.
— Nov.	Boat belonging to the Argo of Fayal.	Unknown		11	—	—	—	Capsized; total	11	Unknown	9	Off Porthcawl.
TOTAL			7	503	43							
						Cargo.	Ballast.	Un-known.				
						4	2	1				
						Total.		Partial.				
						5		2			29	

St. David's Head and Carnsore Point to Lambay Island and Skerries, Anglesea.

14 Jan.	Henry Holman, 13 yrs.	Brigant*	158	8	Liverpool	Bermuda	Coal and machinery.	Disabled; partial	1*	W.N.W.	12	Holyhead Bay.
24 Jan.	Armenian, 10 years.	S. S.	763	48	Liverpool	Madeira & W. Coast of Africa.	General, & 42 passengers.	Stranded; total	8	N.E.	4	Arklow Bank, co. Wicklow.
29 Jan.	Marquis of Anglesea, 39 years.	Smack	47	3	Abersoch	Belfast	Coal, and master's wife.	Stranded; partial	4	S.S.E.	9	Studwalls Roads, Carnarvon.
30 Jan.	Stirlingshire, 18 years.	Barque	365	14	Demerara	Liverpool	Sugar, molasses, & rum.	Stranded; partial	6	W.N.W.	6	South Rock of Tuskar, co. Wexford.
20 Mar.	Teazer, 11 years.	Schooner	86	5	Dunkirk	Barrow	Flour, and 2 passengers.	Stranded; total	4 crew 2 pas.	E.N.E.	8	North Bar of Wexford Harbour.
— June.	Catherine & Jane, 24 yrs.	Schooner	71	4	Waterford	Dublin	Wheat	Foundered (supposed); total.	4	Unknown		Between Waterford and Dublin.
16 Nov.	Sharpedon, 5 years.	Barque	566	18	Liverpool	Maranham	General, & 2 passengers.	Loss of spar, &c.; partial.	1	S.S.W.	9	Holyhead Bay.
6 Dec.	Barbadian, 9 years.	S. S.	724	35	Liverpool	Barbados	General, and 4 passengers.	Stranded; total	14	S.W.	9	Blackwater Bank, co. Waterford.
25 Dec.	Tenasserim, 4 years.	Ship	1,002	36	Liverpool	Calcutta	General	Stranded; total	2	S.S.W.	10	Arklow Bank.
TOTAL			9	3,782	171							
						Cargo.	Ballast.	Un-known.				
						9	—	—				
						Total.		Partial.				
						5		4				
									46			

Skerries and Lambay to Fair Head and Mull of Cantire.

6 Jan.	Elizabeth, 32 years.	Brigant*	96	5	Dublin	Liverpool	Porter, & 1 passenger.	Stranded; total	6 including 1 pas.	N.W.	9	Brazil Bank Rock Light bearing S.E. 2½ miles.
14 Jan.	Lelia, 1 year	S. S.	431	48 and pilot.	Liverpool	Bermuda	Iron and coal, & 7 passengers.	Foundered; total	51 viz. 44 cw. & 7 of lifebt.	N.W.	9	Six miles W. of the N.W. Light-ship, Liverpool.
17 Jan.	Margaret, 26 years.	Schooner	52	3	Irvine	Belfast	Coal	Stranded; total	3	W.N.W.	9	Corsewall Point.
6 Mar.	Magdalen Esther.	Schooner	104	6	Barrow	Cardiff	Iron ore	Loss of spars, &c.; partial.	1	N.N.W.	8	15 miles W. by N. of Walney.
10 Mar.	Bethea, 32 years.	Brig	119	7	Whitehaven	Cardiff	Iron ore	Stranded; total	2	N.W.	8	Between Dunroof and the two fathom banks.
8 Sept.	Glenkins, 62 years.	Schooner	70	3	Liverpool	Lancaster	Stone	Stranded; total	3	S.W.	9	Walney Island, Lancaster.
17 Oct.	Ann, unknown.	Smack	8	4	Ayr	Island of Arran.	Coal, & 1 passenger.	Capsized; partial	4	Unknown		Off Lamlash.
24 Oct.	Prince of Wales, 24 years.	Schooner	46	2	Queensferry	Liverpool	Ballast	Stranded; partial	1	W.	9	Near Redstones, Cheshire.
29 Oct.	Vulcan, unknown.	Smack	20	6	Balbriggan	Fishing voyage.	Ballast	Stranded; total	5	S.	9	Mouth of the River Boyne.

* One of the Holyhead lifeboat crew.

Wrecks and Casualties (exclusive of Collisions) occasioning Loss of Life (geographically arranged), from the 1st January to the 31st December 1865, inclusive—*continued.*

Date.	Name of Ship, and Age when known.	Description of Vessel.	Tons.	Men.	Port sailed from.	Port bound to.	Cargo.	Nature of Casualty, and whether resulting in Total Loss or Partial Damage.	No. of Lives Lost.	Wind.		Place.
										Direction.	Force.	
Skerries and Lambay to Fair Head and Mull of Cantire—continued.												
17 Nov.	Sarah Jane, unknown.	Sloop	47	2	Liverpool -	Ramsey -	Timber, & 4 passengers.	Stranded ; total -	2 & 4 pas.	Unknown		Comah, near Manghold Head, Isle of Man.
22 Nov.	Favourite, 19 years.	Brig	277	10	Sierra Leone	Liverpool	Palm oil, &c.	Stranded ; total -	10	W.	10	Blackpool Pier, bearing W.S.W., distant $\frac{1}{2}$ mile.
31 Dec.	Senhouse, 11 years.	Brig	133	5	Dublin -	Whitehaven	Ballast -	Stranded ; total -	1	S.W.	11	Near Castletown, Isle of Man.
					Cargo.	Ballast.	Un- known.	Total.	Partial.			
TOTAL -			12	1,403	102	9	3	-	9	3	93	

Cape Wrath to Buchan-ness.

26 Feb.	William, unknown.	Lugger	Unk.	8	Port Gordon	Fishing ground.	Ballast -	Foundered; total -	8	Unknown		Supposed off Burghhead.
15 Aug.	Name and age unk.	Fishing Boat.	Unk.	4	Shetland -	Fishing ground.	Ballast -	Stranded; total -	4	E.S.E.	9	East side of Dunrossness, Shetland.
24 Oct.	Name unknown.	Boat	Unk.	2	Unknown -	Unknown	Ballast -	Capsized (supposed); total.	2	N.E.	4	Off Barra Isle, Shetland.
25 Oct.	Walter Frederick, unknown.	Sloop	41	3	Unknown -	Unknown	Coal -	Stranded; total -	3	N.N.E.	11	Culien Bay, Banff.
15 Nov.	Ellen, unknown.	Schooner	70	3	Hartlepool -	Aberdeen	Coal -	Foundered; total -	1	N.N.W.	9	25 miles N.E. of Buchan-ness.
26 Nov.	Shamrock, unknown.	Sloop	15	2	Thurso -	Tongue -	Meal, &c. & 1 passenger.	Stranded; total -	1	N.	9	Talmin Bay, Sutherlandshire.
26 Nov.	Osprey, 3 years.	Sloop	15	3	Unknown -	Unknown	Unknown	Stranded; total -	3	Unk.	12	Newtown, Buckie, Banf.
— Nov.	Recruit, 8 years.	Schooner	53	5	Lossiemouth	Lerwick -	Staves & ballast, & master's wife.	Foundered (supposed); total.	5 and mst's wife.	Unknown		Between Peterhead and Lerwick.
7 Dec.	Patientia, 40 years.	Brig	213	8	Newcastle -	Christiania	Coal -	Leaky; partial -	1	S.E.	9	About 40 miles S.W. of Sumburghhead Light, Shetland.
					Cargo.	Ballast.	Un-known.	Total.	Partial.			
TOTAL -			9	407	38	5	3	8	1	29		

Buchan-ness to Fern Islands.

4 Jan.	Andrew Wilson, 29 yrs.	Schooner	76	5	Findhorn -	Newcastle-on-Tyne.	Timber -	Stranded; total -	1	W.S.W.	4	Carr Rocks off Fifeness.
6 Jan.	Albion, 18 years.	Schooner	103	5	Sunderland	Dundee -	Coal -	Foundered; total -	5	N.W.	9	Supposed about 35 miles off St. Abb's Head.
11 Feb.	David, 25 years.	Schooner	50	3	Newcastle -	Fraserburgh.	Guano -	Stranded; total -	1	S.	10	$\frac{3}{4}$ of a mile N. of Aberdeen Pier.
18 Feb.	Malvina, 29 years.	Brig	137	5	Sunderland	Aberdeen	Unknown	Foundered (supposed); total.	5	Unknown		Between Sunderland and Aberdeen.
19 Mar.	Elizabeth, 40 years.	Brig	147	6	Hartlepool -	London -	Coal -	Stranded; total -	6	S.E.	9	Wildfire Rocks, Whitbury-Ness.
12 Aug.	Novar, 38 years.	Schooner	89	5	Unknown -	Dundee -	Coal -	Stranded; total -	5	E.	9	West entrance of the River Tay.
12 Aug.	James, 22 years.	Schooner	74	4	Sunderland	Inverness	Coal -	Dismasted; partial	1	S.S.E.	8	30 miles N.N.E. of the Fern Island.
17 Oct.	Margaret, 10 years.	Schooner	82	4	Sunderland	Aberdeen	Coal -	Stranded; total -	4	N.E.	9	3 miles E. of North Berwick.
17 Oct.	Harcourt, 9 years.	Brig	211	8	Burntisland	Copenhagen.	Coal -	Stranded; total -	1	W. by N.	12	5 miles N. of Berwick Harbour.
17 Oct.	Henriette, unknown.	Schooner	Unk.	7	The Tyne -	Drammen	Coal -	Stranded; total -	7	E.	9	Off Burnmouth.
17 Oct.	Janet Allison, new.	Brig	176	8	Dundee -	RioGrande	Coal -	Stranded; total -	7	E.N.E.	9	5 miles N. of Berwick Harbour.
17 Oct.	Fear not, 24 years.	Schooner	71	4	London -	Dundee -	Jute, & 1 passenger.	Stranded; total -	1	E.	9	N. side of Eden River. $3\frac{1}{4}$ miles from St. Andrew's.
18 Oct.	Agnes, unknown.	Schooner	60	4	Portsoy -	Newcastle	Pit props	Stranded; total -	4	E.N.E.	9	3 miles S. of Berwick.
14 Nov.	Totness, 40 years.	Schooner	49	4	Sunderland	Stonehaven	Coal -	Stranded; total -	1 & pilot.	S.S.W.	—	Tout Rock, off Cowie Creek, 1 mile E.N.E. of Stonehaven, Kincardineshire.

Wrecks and Casualties (exclusive of Collisions) occasioning Loss of Life (geographically arranged), from the 1st January to the 31st December 1865, inclusive—*continued*.

Date.	Name of Ship, and Age when known.	Description of Vessel.	Tons.	Men.	Port sailed from.	Port bound to.	Cargo.	Nature of Casualty, and whether resulting in Total Loss or Partial Damage.	No. of Lives lost.	Wind.		Place.
										Direction.	Force.	
Buchan-ness to Fern Islands—continued.												
6 Dec.	Princess, unknown.	Schooner	95	5	London -	Dundee -	Jute -	Stranded; total -	5	S.E.	10	Mouth of River Tay.
27 Dec.	Jane, unk. -	Smack	18	2	Saundersfoot	Milford -	Culm -	Foundered (supposed); total.	2	S.W.	9	Supposed off St. Gowan's Head.
31 Dec.	Isabella, 26 years.	Schooner	145	5	Seaham -	Dundee -	Coal -	Stranded; total -	3	W.	10	Near Westhaven.
					Cargo.	Ballast.	Un-known.	Total.	Partial.			
TOTAL -		17	1,583	84	16	-	1	16	1	60		

All other Parts of the Coast.

14 Jan.	Ellen Sophia, 10 years.	Brig	202	8	Demerara	Liverpool	Rum and sugar.	Stranded; total	8	N.W.	10	Ballydavid Hd., co. Kerry.
29 Jan.	Assaye, 11 years.	Ship	1,598	47	Bombay	Liverpool	Cotton & 1 passenger.	Stranded; total	1	S. by W.	9	Ross Bay, co. Cork.
29 Jan.	Sextus, 10 years.	Barque	398	16	Malta	Queens-town.	Indian Corn.	Stranded; total	6	S.	11	Curragh Pt., co. Waterford.
30 Jan.	Panope, 25 years.	Brig	142	7	Brazils	Liverpool	Cotton & Sugar.	Foundered; total	1	W.S.W.	4	2 miles S.S.E. of the Tower Hook.
30 Jan.	Giardiniera	Barque	400	17	Unknown	Unknown	Bones & Marble.	Stranded (supposed); total.	17	S.W.	10	Inch Strand, near Dingle.
22 Aug.	Shamrock, unknown.	Smack	28	2	Youghal	Unknown	Bricks	Foundered; total	1	S.	9	Between Ballycotton and Poor Head.
18 Dec.	Noel, 11 yrs.	Brig	135	8	Newfoundland.	Greenock	Fish and Seal Skins.	Stranded; total	1	S.	8	Island of Tyree, co. of Argyle.
21 Dec.	Ibis, 5 years	S.S.	608	24	London	Cork	General, & 16 passengers.	Stranded; total	16 viz. 10 cr. & 6 pas.	S.W.	6 to 7	$\frac{1}{2}$ mile S. of Ballycroneen.
22 Dec.	Mohawk, 23 years.	Brig	154	Unk., supd. 10	Lagos	London	Palm Oil	Foundered (supposed); total.	10	Unk.	12	Supposed off the Skelligs on the West Coast of Ireland.
25 Dec.	Lexinton, 9 years.	Barque	344	11	Liverpool	Havana	Coal, & 3 passengers.	Foundered; total	1	S.S.W.	9	Off Coll, Argyleshire.
29 Dec.	Eugenie, 10 years.	Ship	1,136	25	Liverpool	St. John's, N.B.	General	Stranded; total	13	S.W.	10	Ballymacotton Rocks, co. Cork.
30 Dec.	Elizabeth, 9 years.	Brig	178	9	St. Paul de Loando.	Queens-town.	General	Stranded; total	4	S.W.	10	Near Gollen Hd., co. Galway.
30 Dec.	Otter, new	Barque	327	9	Philadelphia	Havre	Petroleum	Stranded; total	1	W. $\frac{1}{2}$ S.	9	Near Mullranny, Co. Mayo.
31 Dec.	Bermuda, new.	Ship	677	20	Greenock	Trinidad	Coal, &c.	Stranded; total	1	S.	10	Watersay, Island of Barra.
31 Dec.	Guy Mannering, 15 years.	Ship	1,610	32	New York	Liverpool	Cotton & Grain.	Stranded; total	18	W.	10	Island of Iona, co. of Argyle.
31 Dec.	Palmar, unk.	Unknown		8	Black River, Jamaica.	Liverpool	Logwood & 2 passengers.	Stranded; total	3	Unknown		Near Oban.
					Cargo.	Ballast.	Un-known.	Total.	Partial.			
TOTAL			16	7,937	253	16	—	—	16	—	102	

At Sea.

5 Jan.	Fly, 12 years	Brig	153	6	St. Malo	Seaham	Ballast	Struck by heavy sea; partial.	1	S.	5	53°45 N., 1°20 E.
5 Jan.	Sea Gull, 19 years.	Smack	31	4	Grimsby	North Sea Fishery.	Ballast	Foundered; total	4	Unk.	10	Supposed on Dogger Bank.
6 Jan.	Fifeshire, 46 years.	Smack	57	7	Grimsby	North Sea Fishery.	Ballast	Foundered; total	1	N.W.	9	E. of Great Silver Pits. Spurn Lights W.S.W. 140 miles.
6 Jan.	Laurel, 47 years.	Smack	40	11	Grimsby	North Sea Fishery.	Ballast	Struck by heavy sea; partial.	1	W.N.W.	9	Spurn Lights W. by S. 140 miles.
6 Jan.	Water Witch, 23 years.	Smack	39	9	Grimsby	North Sea Fishery.	Ballast	Foundered; total	1	W.N.W.	9	Spurn Lights W. by S. 160 miles.
6 Jan.	Witch of the Wave, 13 years.	Smack	55	10	Grimsby	North Sea Fishery.	Ballast	Struck by heavy seas; partial.	2	W.N.W.	9	Spurn Lights S.W. by W. 170 miles.
6 Jan.	Guide, 6 yrs.	Smack	39	5	Ramsgate	North Sea Fishery.	Ballast	Struck by heavy seas; partial.	1	W.N.W.	9	Spurn Lights W. by N. 90 miles.
14 Jan.	Glaucus, 14 years.	Brig	226	13	Pernambuco	Liverpool	Cotton & Sugar.	Disabled; partial	2	N.W.	10	50°49 N., 11°0 W.
21 Jan.	Miranda and Fanny, 10 years.	Smack	33	5	Hull	North Sea Fishery.	Ballast	Foundered; total	5	—	—	Supposed near Silver Pits.
— Jan.	Welkin, under 1 year.	Schooner	99	Unk., sup. 6	Garmouth	Sunderland	Ballast	Foundered; total	6	—	—	At Sea between Garmouth and Sunderland.

Wrecks and Casualties (exclusive of Collisions) occasioning Loss of Life (geographically arranged), from the 1st January to the 31st December 1865, inclusive—continued.

Date.	Name of Ship, and Age when known.	Description of Vessel.	Tons.	Men.	Port sailed from.	Port bound to.	Cargo.	Nature of Casualty, and whether resulting in Total Loss or Partial Damage.	No. of Lives lost.	Wind.		Place.
										Direction.	Force	
At Sea—continued.												
— Jan.	Sisters, 28 years.	Smack	46	7	Great Yarmouth.	North Sea Fishery.	Ballast	Foundered (supposed); total.	7	—	—	Fishing ground off Scarborough.
19 Feb.	Band of Hope, 6 years.	Smack	61	10	Grimby	North Sea Fishery.	Ballast	Loss of sail and spar; partial.	1	N.N.W.	9	Dogger Bank, 170 miles E.N.E. of Spurn Lights.
20 Feb.	General Havelock, 5 years.	Smack	54	9	Grimby	North Sea Fishery.	Ballast	Loss of spar, &c.; partial.	1	N.	9	Dogger Bank, 150 miles E.N.E. of the Spurn.
20 Feb.	Admiral, 24 years.	Smack	60	9	Grimby	North Sea Fishery.	Ballast	Loss of sail and spar; partial.	4	N.N.E.	9	Dogger Bank, 160 miles E.N.E. of the Spurn.
— Feb.	Newark, 1 year.	Smack	53	5	Hull	North Sea Fishery.	Fish	Foundered; total	5	Unknown		Supposed on the Dogger Bank.
6 Mar.	Sarah Stibbs, unk.	Smack	30	4	Plymouth	Fishing voyage.	Ballast	Foundered; total	4	N.N.W.	9	Left Plymouth on Fishing Vcyage.
— Mar.	Lussin, unk.	Barque	350	13	Odessa	Galway	Wheat	Foundered (supposed); total.	13	Unknown		Between Falmouth and Galway.
— Mar.	Olive Branch, 51 years.	Schooner	61	5	Charlestown	Runcorn	Slyme Ore	Foundered (supposed); total.	5	Unknown		Between St. Mawes and Runcorn.
29 April	White, 4 years.	Schooner	141	6	Holyhead	London	Railway Materials.	Foundered (supposed); total.	6	Unknown		Between Holyhead and London.
— Oct.	Eliza, unk.	Brig	193	8	Sunderland	Portsmouth.	Coal	Foundered (supposed); total.	8	Unknown		On her voyage from Sunderland to Portsmouth.
— Oct.	Betsey, 15 years.	Schooner	63	Unk., sup. 5	Crail	Shoreham	Unknown	Foundered; total	Unk., sup. 5	Unknown		On a voyage from Crail to Shoreham.
22 Nov.	Alpha, 6 months.	Brig	256	12	Patras	London	Fruit (dry)	Loss of mast, &c.; partial.	2	S.W.	12	Scilly, N.W. by N. 30 miles.
TOTAL			22	2,140	169							
						Cargo.	Ballast.	Un-known.				
						7	14	1	13	9	85	

Table 23. STATEMENT of the Number of Lives lost in certain DISTRICTS OF THE COASTS of the United Kingdom, distinguishing those lost off the Coasts at Sea, and those lost through Casualties caused by Collisions, during the Seven Years ended December 1865.

Districts.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	Total.	Annual Average.
Fern Islands to Flamborough Head - -	12	25	147	9	3	35	68	299	42½
Flamborough Head to the North Foreland -	72	107	111	68	54	69	45	526	75½
North Foreland to St. Catherine's Point -	102	31	49	1	18	3	9	213	30½
St. Catherine's Point to Start Point - -	25	12	1	20	3	—	23	84	12
Start Point to the Land's End - -	25	12	15	36	7	1	20	116	16½
Land's End to Hartland Point, including Scilly - -	145	10	23	29	36	11	36	290	41½
Hartland Point to St. David's Head - -	126	82	33	102	16	38	29	426	60½
St. David's Head and Carnsore Point to Lambay Island and Skerries, Anglesea - -	472	3	90	64	55	3	46	733	104½
Skerries and Lambay to Fair Head and Mull of Cantire - -	537	50	144	44	45	90	93	1,003	143½
Cape Wrath to Buchan-ness - -	8	44	19	26	4	41	29	171	24½
Buchan-ness to Fern Islands - -	37	21	9	5	13	72	60	217	31
All other parts of the coast - -	6	62	80	83	76	48	102	457	65½
Lives lost on the coast - -	1,567	459	721	487	330	411	560	4,535	647½
Lives lost at Sea off the coast - -	21	6	74	149	249	14	85	598	85½
Lives lost by Collision - -	59	72	89	54	41	91	53	459	65½
Total Number of Lives lost -	1,647	537	884	690	620	516	698	5,592	798½

Table 25. List of LIFE BOATS on the Coasts of the United Kingdom, distinguishing the PLACE where each Boat is stationed, and the Persons, Committees, &c., having the MANAGEMENT thereof; geographically arranged.

Name of Coast Guard Division or Receivers District.	Name of Station.	No. of Boats.	Management.	Name of Coast Guard Division or Receivers District.	Name of Station.	No. of Boats.	Management.
GREAT BRITAIN.				GREAT BRITAIN—continued.			
Wick	Scrabster	1	National Life Boat Institution.	Grimsby	Donna Nook	1	National Life Boat Institution.
	Wick	1	British Fisheries.		Theddlethorpe	1	Do.
Banff	Lossiemouth	1	National Life Boat Institution.		Sutton	1	Do.
	Buckie	1	Do.		Skegness	1	Do.
	Banff	1	Do.	Wells	Blakeney	1	Do.
Fraserburgh	Fraserburgh	1	Do.	Cromer	Sherringham	1	Mr. Upcher.
					Cromer	1	National Life Boat Institution.
Aberdeen	Peterhead	1	Do.		Mundesley	1	Do.
	Aberdeen	2	Harbour Commissioners.		Bacton	1	Do.
Montrose	Stonehaven	1	Provost and Council.		Falling	1	Do.
	Montrose	1	Harbour Commissioners.	Gt. Yarmouth	Winterton	1	Do.
	Arbroath	1	National Life Boat Institution.		Scraby	1	Boatmen.
Dundee	Broughty Ferry	1	Do.		Caister	1	National Life Boat Institution.
Elie	St. Andrews	1	Do.		Yarmouth	2	Do.
	Anstruther	1	Do.		Gorleston	2	Boatmen.
Leith	North Berwick	1	Do.		Lowestoft	1	National Life Boat Institution.
	Dunbar	1	Do.		Pakefield	1	Do.
Berwick	Spital	1	Do.		Kessingland	1	Boatmen.
	Holy Island	1	Do.		Southwold	1	National Life Boat Institution.
	N. Sunderland	1	Do.	Aldbrough	Thorpness	1	Do.
	Boulmer	1	Do.		Aldbrough	1	Do.
	Alnmouth	1	Do.	Ramsgate	Margate	1	Boatmen
	Hauxley	1	Do.		Do.	1	National Life Boat Institution.
Sunderland	Newbiggin	1	Do.		Kingsgate	1	Do.
	Blyth	2	Harbour Commissioners, one subsidized by Board of Trade.		Broadstairs	2	Boatmen.
	Cullercoats	1	National Life Boat Institution.		Ramsgate	1	Board of Trade.
	Shields	3	Harbour Commissioners.		North Deal	1	National Life Boat Institution.
	Tynemouth	2	National Life Boat Institution.		Walmer	1	Do.
	Whitburn	1	Do.	Folkestone	Townsend	1	Do.
	Sunderland	3	River Wear Commissioners.		Littlestone	1	Do.
	Ditto	1	National Life Boat Institution.	Hastings	Camber	1	Do.
	Ditto	1	Seamen.		Winchelsea	1	Do.
	Hartlepool	4	Hartlepool Life Boat Society and Seamen, but subsidized by Board of Trade.		Hastings	1	Do.
	Ditto	2	Harbour Commissioners.	Holywell	Eastbourne	1	Do.
	Seaton Carew	1	National Life Boat Institution.	Brighton	Newhaven	1	Do.
Whitby	Middlesboro'	1	Do.		Brighton	1	Do.
	Redcar	2	One, National Life Boat Institution.		Shoreham	1	Do.
			One, Local Subscribers.		Worthing	1	Do.
	Saltburn	1	National Life Boat Institution.	Bognor	Selsey	1	Do.
	Whitby	4	Three, National Life Boat Institution.	Southsea	Hayling Isld.	1	Do.
			One, Fishermen.	S. Yarmouth	Grange	1	Do.
	Robin Hood's Bay.	1	Local Subscribers and Whitby Commissioners.		Brooke	1	Do.
Bridlington	Scarborough	1	National Life Boat Institution.	Lyme	Poole	1	Do.
	Filey	1	Do.		Lyme Regis	1	Do.
	Bridlington Quay.	1	Do.	Exmouth	Exmouth	1	Do.
	Hornsea	1	Do.		Teignmouth	1	Do.
	Withernsea	1	Do.	Plymouth	Stonehouse Point.	1	Do.
Patrington	Spurn Point	1	Hull Trinity House.	Fowey	Polkerris	1	Do.
				Falmouth	Lizard	1	Do.
					Porthleven	1	Do.
				Penzance	Penzance	1	Do.
					Sennen Cove	1	Do.
					St. Ives	1	Do.

Table 25—continued.

Name of Coast Guard Division or Receivers District.	Name of Station.	No. of Boats.	Management.	Name of Coast Guard Division or Receivers District.	Name of Station.	No. of Boats.	Management.				
GREAT BRITAIN—continued.				GREAT BRITAIN—continued.							
Padstow	New Quay	1	National Life Boat Institution.	Kirkcudbright	Kirkcudbright	1	National Life Boat Institution.				
	Padstow	1	Do.	Ayr	Girvan	1	Do.				
	Bude Haven	1	Do.		Ayr	1	Do.				
Barnstaple	Appledore	1	Do.		Irvine	1	Do.				
	Braunton Sands	1	Do.	Greenock	Ardrossan	1	Harbour Commissioners, but subsidized by Board of Trade.				
Bridgewater	Bridgewater	1	Corporation of Bridgewater.		Campbelton	Campbelton	1	National Life Boat Institution.			
Swansea	Penarth	1	National Life Boat Institution.	IRELAND.							
	Porthcawl	1	Do.	Carn	Greencastle	1	National Life Boat Institution.				
	Mumbles	1	Do.		Ballycastle	Portrush	1	Do.			
	Pembrey	1	Do.	Donaghadee	Groomsport	1	Do.				
	Carmarthen Bay.	1	Do.	Newcastle	Tyrella	1	Do.				
Milford	Tenby	1	Do.		Newcastle	1	Do.				
	Fishguard	1	Do.	Dundalk	Dundalk	1	Do.				
	St. Dogmaels	1	Do.		Drogheda	1	Do.				
	New Quay	1	Do.	Malahide	Skerries	1	Do.				
Aberystwith	Aberystwith	1	Do.		Howth	Howth	1	Do.			
	Aberdovey	1	Do.	Dublin	Poolbeg	1	Do.				
	Barmouth	1	Do.		Kingstown	1	Do.				
Caernarvon	Criccieth	1	Do.	Arklow	Wicklow	1	Do.				
	Porthdynllaen	1	Do.		Arklow	1	Do.				
	Llanddwyn	1	Do.		Cahore	1	Do.				
Bangor	Rhoscolyn	1	Do.	Wexford	Rosslare Point	2	Do.				
	Holyhead	1	Do.		Carnsore	1	Do.				
	Cemlyn	1	Do.	Waterford	Tramore	1	Do.				
	Moelfre	1	Do.		Youghal	Dungarvan	1	Do.			
	Penmon	1	Do.	Ardmore		1	Do.				
	Llandudno	1	Do.	Youghal	1	Do.					
Chester	Rhyl	1	Do.	Queenstown	Ballycotton	1	Do.				
	Point of Air	2	Mersey Dock Trustees.		Knightstown	Knightstown	1	Do.			
	Helbre Isld.	1	Do.	CHANNEL ISLANDS.							
	Hoylelake	1	Do.	Guernsey	1	Do.					
	New Brighton	2	National Life Boat Institution.	ISLE OF MAN.							
	Liverpool	2	Mersey Dock Trustees.	Castletown	1	Do.					
Formby	1	Do.									
Southport	1	National Life Boat Institution.									
Fleetwood	Lytham	1	Do.								
	Blackpool	1	Do.								
	Fleetwood	1	Do.								
	Piel Island	1	Do.								
Whitehaven	Whitehaven	1	Harbour Trustees.								
	Maryport	1	National Life Boat Institution.								
Carlisle	Silloth	1	Do.								
	1855.	1856.	1857.	1858.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Life Boats	127	124	141	149	158	173	179	179	178	186	192
Number of Boats under the management of the National Life Boat Institution, 120 of which are subsidized by the Board of Trade											150
Number of Boats under other management, 7 of which are subsidized by the Board of Trade											42
Total											192

Note.—During the year 1865 two Boats have been removed from their stations—one at Brighton, under private management, and one at Ramsgate belonging to the Board of Trade. Eight additional Life Boats have been added this year, viz., one at each of the following places: Peterhead, Anstruther, Dunbar, Tynemouth, Whitby, North Deal, Hayling Island, and Poole.

Table 26. List of Stations of the **ROCKET AND MORTAR APPARATUS** on the Coasts of the United Kingdom belonging to the Board of Trade, and in the Charge and Management of the Coast Guard; geographically arranged.

Name of Coast Guard Division or Receiver's District.	Station.	Description of Apparatus.	Name of Coast Guard Division or Receiver's District.	Station.	Description of Apparatus.
GREAT BRITAIN.			GREAT BRITAIN—continued.		
Wick - - -	Scrabster - -	Rocket.	Bridlington—cont.	Bridlington - -	Rocket and Mortar.
	Wick - - -	Do.		Ulrome - - -	Do. Do.
Banff - - -	Burghead - -	Do.		Hornsea - - -	Do. Do.
	Lossiemouth - -	Do.		Mappleton - -	Rocket.
	Buckie - - -	Mortar.		Aldbrough - -	Do.
	Portsoy - - -	Do.		Sandlemere - -	Rocket and Mortar.
	Banff - - -	Rocket and Mortar.	Patrington - -	Holmpton - -	Rocket.
Fraserburgh - -	Fraserburgh - -	Do. do.		Easington - -	Do.
Aberdeen - -	Peterhead - -	Do. do.	Grimsby - - -	Saltfleet - - -	Mortar.
	Colliestown - -	Do. do.		Oliver's Gap - -	Do.
	Bridge of Don - -	Do. do.		Huttoft - - -	Do.
	Aberdeen—			Chapel - - -	Do.
	N. side of Harbour	Do. do.		Skegness - - -	Do.
	S. side of Harbour	Do. do.	Cromer - - -	Weybourne - -	Rocket and Mortar.
	Midway between			Sherringham - -	Do. Do.
	Harbour and River			Cromer - - -	Do. Do.
	Don - - -	Rocket.		Side-Strand - -	Rocket.
	Cove Bay - - -	Rocket and Mortar.		Mundesley - -	Rocket and Mortar.
Montrose - - -	Stonehaven - -	Mortar.		Bacton - - -	Do. Do.
	Johnshaven - -	Rocket.		Hasboro' - - -	Do. Do.
	Montrose - - -	Rocket and Mortar.		Palling - - -	Do. Do.
	Uzon - - -	Rocket.	North Yarmouth -	Winterton - -	Do. Do.
	Arbroath - - -	Mortar.		Caistor - - -	Do. Do.
	Westhaven - - -	Rocket.		Great Yarmouth -	Do. Do.
Elie - - -	St. Andrew's - -	Do.		Gorleston - - -	Do. Do.
	Crail - - -	Do.		Corton - - -	Rocket.
	Elie - - -	Mortar.		Lowestoft - - -	Rocket and Mortar.
Leith - - -	North Berwick - -	Rocket.		Kessingland - -	Do. Do.
	Dunbar - - -	Rocket and Mortar.		Southwold - - -	Do. Do.
	Redheugh - - -	Rocket.	Aldbrough - -	Misner Haven - -	Rocket.
Berwick - - -	Eyemouth - - -	Do.		Sizewell Gap - -	Mortar.
	Burnmouth - - -	Do.		Thorpness - - -	Rocket.
	Spittal - - -	Do.		Aldbrough - - -	Rocket and Mortar.
	Holy Island - -	Rocket and Mortar.		Orfordness - - -	Rocket.
	Old Law - - -	Rocket.		Orford Haven - -	Rocket and Mortar.
	Newton - - -	Rocket and Mortar.	Harwich - - -	Landguard Fort -	Mortar.
	Craster - - -	Rocket.	Ramsgate - - -	Newgate - - -	Rocket.
	Boulmer - - -	Do.		Ramsgate - - -	Mortar.
	Alnmouth - - -	Do.		St. Margaret's Bay	Rocket.
	Amble - - -	Do.	Folkestone - -	Casemates - - -	Mortar.
Sunderland - -	Newbiggin - - -	Do.		Folkestone - - -	Rocket.
	Blyth Haven - -	Rocket and Mortar.		24 Tower - - -	Mortar.
	Seaton Sluice - -	Rocket.		Littlestone - -	Rocket.
	Cullercoats - -	Rocket and Mortar.	Dungeness - -	No. 2 Battery - -	Do.
	Tynemouth - - -	Do. Do.		Dungeness - - -	Do.
	Shields - - -	Do. Do.		Lydd - - -	Do.
	Whitburn - - -	Rocket.		Jury's Gap - - -	Do.
	Marsden - - -	Do.	Hastings - - -	Camber - - -	Do.
	Sunderland, S. Pier	Do.		31 Tower - - -	Do.
	" N. Pier - - -	Do.		Hastings - - -	Do.
	" Sea Outlet - -	Do.		39 Tower - - -	Mortar.
	" Watchhouse -	Rocket and Mortar.	Holywell - - -	Eastbourne - -	Rocket.
	Seaham - - -	Rocket.		Birling Gap - - -	Mortar.
	Hawthorn Hive - -	Do.	Brighton - - -	Blatchington - -	Mortar.
	Blackhalls - - -	Do.		Newhaven - - -	Rocket.
	Hartlepool - - -	Rocket and Mortar.		Greenway - - -	Mortar.
	Seaton Carew - -	Rocket.		Brighton - - -	Rocket.
Whitby - - -	Coatham - - -	Do.		Shoreham - - -	Do.
	Saltburn - - -	Do.	Ryde - - -	St. Lawrence - -	Do.
	Skinningrove - -	Do.	South Yarmouth -	Reeth - - -	Do.
	Staithes - - -	Do.		St. Catherine's Point	Do.
	Kettleness - - -	Do.		Atherfield - - -	Do.
	Sandsend - - -	Do.		Brixton - - -	Do.
	Whitby - - -	Rocket and Mortar.		Brooke - - -	Do.
	Robin Hood's Bay	Do. Do.	Lymington - -	Barton Cliff - -	Do.
Bridlington - -	Burniston - - -	Rocket.			
	Searborough - -	Rocket and Mortar.			
	Cayton - - -	Rocket.			
	Filey - - -	Rocket and Mortar.			
	Flambro' Head - -	Do. Do.			

Table 26—continued.

Name of Coast Guard Division or Receiver's District.	Station.	Description of Apparatus.	Name of Coast Guard Division or Receiver's District.	Station.	Description of Apparatus.						
GREAT BRITAIN—continued.			GREAT BRITAIN—continued.								
Bournemouth	Tuckton	Rocket.	Fleetwood	Bispham	Rocket.						
Swanage	Swanage	Do.	Whitehaven	Whitehaven	Do.						
	St. Alban's Head	Do.		Maryport	Do.						
	Kimmeridge	Do.	Stranraer	Drumore	Do.						
Abbotsbury	Langton	Mortar.		Port Logan	Do.						
	Abbotsbury	Rocket.		Port Patrick	Rocket & Mortar.						
	Burton	Mortar.	Greenock	Ardrossan	Rocket.						
Lyme	Bridport	Do.	IRELAND.								
	Lyme	Rocket.	Donaghadee	Groomsport	Mortar.						
	Axmouth	Do.		Roddens	Do.						
Exmouth	Sidmouth	Rocket and Mortar.	Newcastle	Annalong	Rocket.						
	Budleigh Salterton	Rocket.	Dundalk	Clogher Head	Do.						
	Exmouth	Do.	Malahide	Balbriggan	Do.						
Dartmouth	Paignton	Mortar.		Skerries	Do.						
	Torcross	Do.		Portrane	Do.						
Salcombe	Rickham	Rocket.		Malahide	Do.						
	Challabro	Do.	Hewth	Howth	Do.						
Plymouth	Port Wrinkle	Do.	Dublin	Kingstown	Rocket & Mortar.						
Fowey	Polruan	Do.		Bray	Mortar.						
Falmouth	St. Anthony	Do.		Greystones	Rocket.						
	Lizard	Do.	Arklow	Five Mile Point	Do.						
	Mullion	Do.		Wicklow	Do.						
	Porthleven	Do.		Jack's Hole	Do.						
Penzance	Prussia Cove	Do.		Arklow	Do.						
	Penzance	Rocket and Mortar.		Kilmichael	Do.						
	Mousehole	Rocket.		Courtown	Do.						
	Sennen Cove	Do.		Cahore	Do.						
	Pendeen Cove	Do.	Wexford	Morris Castle	Do.						
	St. Ives	Do.		Curraeloe	Do.						
St. Agnes	Portreath	Mortar.		Rosslare	Do.						
	St. Agnes	Rocket.		Carnore Point	Do.						
Padstow	Mawgan Porth	Do.		Kilmore	Do.						
	Newquay	Do.		Bar of Lough	Do.						
	Trevoze Head	Do.	Waterford	Fethard	Do.						
	St. George's Cove	Do.		Ballymacaw	Mortar.						
	Harbour Cove	Mortar.		Bonmahon	Do.						
	St. Trebeatherick	Do.	Youghal	Ardmore	Rocket.						
	Port Isaac	Rocket and Mortar.		Youghal	Do.						
	Boscastle	Rocket.	Queenstown	Ballycotton	Do.						
	Budehaven	Do.		Poor Head	Do.						
Barnstaple	Clovelly	Rocket and Mortar.	Kinsale	Robert's Cove	Do.						
	Appledore	Rocket.		Oyster Haven	Do.						
	Braunton Sands	Mortar.		Old Head of Kinsale	Do.						
	Morthoe	Do.		Courtmacherry	Do.						
	Ilfracombe	Rocket.		Barry Cove	Do.						
	Lynmouth	Mortar.		Dirk Cove	Do.						
Swansea	Penarth	Rocket.	Skibbereen	Milk Cove	Do.						
	Barry Island	Rocket and Mortar.		Castletownsend	Do.						
	Porthcawl	Rocket.		Baltimore	Do.						
	Mumbles	Do.		Crookhaven	Do.						
	Oxwich	Do.	Knightstown	Knightstown	Do.						
	Burry Port	Two Mortars.	Dingle	Ventry	Do.						
Milford	Tenby	Rocket.	Killybegs	Killybegs	Do.						
	Castle Tank	Mortar.	Rutland	Portnoo	Do.						
	Angle	Do.	SCILLY ISLANDS.								
	St. David's	Do.		St. Mary's	Rocket and Mortar.						
	Goodwick	Rocket.	ISLE OF MAN.								
	Newport	Do.		Peel	Rocket.						
	St. Dogmaels	Do.									
	Newquay	Mortar.									
Carnarvon	Porthdynllaen	Rocket.									
Bangor	Holyhead	Rocket and Mortar.									
	Amlwch	Rocket.									
Number of Stations.			1857.	1858.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
In England and Wales			140	157	156	167	166	167	167	166	169
In Ireland			34	37	37	41	41	42	43	44	46
In Scotland			24	22	23	25	28	29	29	32	33
In Isle of Man			—	—	—	—	—	—	—	1	1
Total			198	216	216	233	235	238	239	243	249

Note.—During the year 1865 new Stations were established at Newhaven, Langton, Newquay, Pembrokeshire (to which a mortar has been removed from St. Dogmaels), Ardrossan, Five Mile Point, and Jack's Hole.

Table 27. LIST of STATIONS on the Coasts of the United Kingdom to which LIFE BELTS have been supplied.

District or Division.	Station.	Belts.	Lines.	District or Division.	Station.	Belts.	Lines.
GREAT BRITAIN.				GREAT BRITAIN—continued.			
Lerwick -	Lerwick -	5	5	Bridlington—cont. -	Mappleton -	2	-
Cromarty -	Cromarty -	11	11		Aldbrough -	2	-
Banff -	Burghead -	5	5		Sandlemere -	5	5
	Lossiemouth -	5	-	Patrington -	Holmpton -	2	3
	Buckie -	3	3		Kilnsea -	4	2
	Portsoy -	5	5		Stone Creek -	2	-
	Banff -	6	-	Barton -	Ferriby Sluice -	3	3
Fraserburgh -	Gardenstown -	5	5		Barton -	5	5
	Pennant -	5	5		Killingholme -	5	5
	Roseheartly -	5	5	Grimaby -	Cleethorpes -	8	8
	Fraserburgh -	8	8		Donna Nook -	10	10
	St. Combs -	5	-		Saltfleet -	5	5
	Rattray Head -	5	5		Mablethorpe -	8	8
Aberdeen -	Peterhead -	6	6		Sutton -	5	5
	Colliestown -	6	6		Chapel -	10	10
	Bridge of Don -	3	3		Skegness -	7	5
	Cove Bay -	2	2		Gibraltar Point -	5	5
	Muchals -	2	2	Wells -	Hunstanton -	5	5
Montrose -	Stonehaven -	2	2		Brancaster -	5	5
	Katerline -	3	3		Burnham -	6	6
	Uzon -	5	5		Wells -	6	6
	Redcastle -	2	2		Eastern Marsh -	3	3
	Auchmuthie -	2	2		Morston -	5	5
	Westhaven -	2	2		Cley -	3	3
Elie -	St. Andrew's -	4	4	Cromer -	Weybourne -	5	5
	Crail -	2	2		Sherringham -	5	5
	Anstruther -	2	2		Cromer -	5	5
	Elie -	4	4		Sidestrand -	5	5
Leith -	North Queensferry -	5	5		Mundesley -	5	5
	North Berwick -	7	7		Bacton -	5	5
	Dunbar -	8	8		Happisburgh -	5	5
	Redheugh -	7	7		Palling -	5	5
Berwick -	Eyemouth -	2	2	North Yarmouth -	Winterton -	5	-
	Burnmouth -	3	3		Caistor -	5	-
	Berwick -	2	2		Yarmouth -	4	-
	Spittal -	5	5		Gorleston -	2	-
	Holy Island -	5	5		Corton -	2	-
	North Sunderland -	4	4		Lowestoft -	5	-
	Newton -	5	5		Keasingland -	5	4
	Craster -	5	5		Southwold -	5	2
	Boulmer -	1	-	Aldborough -	Dunwich -	2	-
	Alnmouth -	4	1		Misner Haven -	2	-
	Amble -	2	1		Sizewell Gap -	3	-
Sunderland -	Newbiggin -	2	-		Thorpe -	2	-
	Blyth Haven -	5	2		Aldborough -	7	2
	Seaton Sluice -	2	1		Orfordness -	7	7
	Cullercoats -	1	1		Orford Haven -	8	8
	Tynemouth -	3	3	Harwich -	Woodbridge -	5	5
	South Shields -	1	1		Landguard -	2	-
	Mariden -	1	1		Harwich -	5	5
	Whitburn -	2	-		Llanford Watch Vessel -	2	2
	Sunderland -	7	3		Clacton Wash -	2	2
	Seaham -	2	1	Sheerness -	Sheerness -	5	5
	Hawthorne Hive -	1	1	Whitstable -	Shellness -	5	5
	Blackhalls -	2	2		Whitstable -	5	5
	Hartlepool -	5	5		Tankerton -	5	5
	Seaton Carew -	2	2		Swale Cliff -	5	-
Whitby -	Coatham -	6	-		Herne Bay -	5	-
	Saltburn -	7	-		Bishopstone -	5	-
	Skinningrove -	2	-		Reculvers -	5	5
	Staithes -	5	5	Ramsgate -	St. Nicholas -	5	5
	Kettleness -	1	1		Eppe Bay -	5	5
	Whitby -	8	8		West Gate -	5	5
	Sandsend -	1	1		Margate -	5	5
	Robin Hood's Bay -	5	4		Newgate -	5	5
	Stainton Dale -	1	1		Kingsgate -	5	5
Bridlington -	Burniston -	1	1		Broadstairs -	5	5
	Scarborough -	3	3		Pegwell Bay -	5	5
	Cayton -	1	1		Shingle End -	5	5
	Filey -	5	5		2 Battery -	5	5
	Flambro' Head -	5	5		1 Battery -	5	5
	Bridlington Quay -	5	5		North End -	5	5
	Ulrome -	3	3		Walmer -	5	5
	Hornsea -	5	5		Kingsdown -	5	5
					St. Margaret's Bay -	5	5

Table 27—continued.

District or Division.	Station.	Belts.	Lines.	District or Division.	Station.	Belts.	Lines.
GREAT BRITAIN—continued.				GREAT BRITAIN—continued.			
Folkestone -	Casemates -	6	6	Cowes -	Newtown -	5	5
	Lydden Spout -	5	5		Sticelett -	5	5
	Pelter -	5	5		East Cowes -	5	5
	Folkestone -	5	5		Fishbourne -	5	5
	Sandgate -	5	5	Lymington -	Marchwood -	5	5
	Hythe -	5	5		Calshot Castle -	5	5
	Brockman's Barn -	5	—		Lepe -	5	5
	24 Tower -	10	5		Beaulieu River -	5	5
	27 Tower -	5	5		Pitts Deep -	5	5
	Littlestones -	5	—		Lymington -	5	5
	Romney -	5	5		Milford -	5	5
Dungeness -	2 Battery -	5	5		Barton Cliff -	5	5
	1 Battery -	5	5		Christchurch -	5	5
	Grand Redoubt -	6	6	Bournemouth -	Bournemouth -	5	5
	Dungeness -	5	5		Tuckton -	5	5
	Gallaway -	5	5		Flag Head -	5	5
	Lydd -	6	6	Swanage -	Branksea -	5	5
	Jury's Gap -	5	5		Studland Bay -	5	5
Hastings -	Rye -	5	5		Swanage -	7	7
	31 Tower -	—	5		St. Alban's Head -	7	7
	36 Tower -	—	5		Kimmeridge -	7	7
	Haddocks -	5	5	Weymouth -	Warborough -	5	5
	Ecclesbourne -	5	—		Lulworth -	5	5
	Priory -	5	5		Whitenose -	5	5
	39 Tower -	5	5		Osmington -	5	5
	Galley Hill -	4	4		Preston -	5	5
	Bexhill -	—	5		Weymouth -	5	5
	Kewhurst -	—	5		Portland -	5	5
	Pevensy -	—	5		Hill -	5	5
	Langley -	—	5		Wyke -	5	5
Holywell -	Eastbourne -	7	2	Abbotsbury -	Langton -	6	6
	Holywell -	5	5		Abbotsbury -	7	7
	Birling Gap -	5	5		Burton -	6	6
	Crow Link -	5	5	Lyme -	Bridport -	7	5
	Crickmere -	5	5		Chidcock -	5	5
Brighton -	Bletchington -	10	10		Charmouth -	4	4
	Newhaven -	5	5		Lyme Cobb -	7	5
	Greenway -	5	5		Axmouth -	7	5
	Blackrock -	5	5		Beer -	4	4
	Brighton -	5	5		Branscombe -	5	5
	Hove -	5	5	Exmouth -	Weston -	5	3
	Fishergate -	5	5		Sidmouth -	5	5
	Shoreham -	5	5		Budleigh Salterton -	7	5
	Lancing -	5	5		Exmouth -	8	—
	Worthing -	5	5		Dawlish -	7	5
Bognor -	Kingston -	5	5		Teignmouth -	5	—
	Littlehampton -	5	—	Dartmouth -	Babbicombe -	5	5
	Elmer -	5	—		Torquay -	5	5
	Bognor -	5	5		Paignton -	5	5
	Pagham -	5	—		Brixham -	5	5
	Do. Harbour Detach- ment.	5	—		Man Sands -	5	5
	Selsey -	10	—		Kingswear -	3	3
	Thorney -	6	—		Dartmouth -	5	5
	Old Thorney -	3	—		Blackpool -	3	3
	Cockbush -	5	—		Tor Cross -	5	5
	Chichester Harbour -	5	5		Hall Sands -	3	3
Southsea -	Hayling Island -	5	5	Salcombe -	Prawle -	5	5
Southampton -	Woolston -	10	—		Rickham -	7	7
Ryde -	Ryde -	5	5		Salcombe -	5	5
	Spring Vale -	3	3		Hope Cove -	5	5
	Sea View -	5	5		Challabro' -	8	8
	Brading -	3	3		Mothercomb -	5	5
	Pembridge -	6	6	Plymouth -	Yealm -	5	5
	Foreland -	2	2		Bovisand -	5	5
	Sandown -	5	5		Mount Batten -	5	—
	Shanklin -	5	5		Cawsand -	5	5
	Ventnor -	5	5		Polham Cove Detacht.	4	4
	St. Lawrence -	1	1		Portwrinkle -	8	5
	Woody Bay -	3	3		Downderry -	5	5
South Yarmouth -	Reeth -	4	4		Looe -	5	5
	St. Catherine's Point -	5	5	Fowey -	Polperro -	5	5
	Atherfield -	6	6		Fowey -	7	5
	Brixton -	4	4		Polkerris -	5	—
	Brook -	5	5		Porthpean -	5	—
	Freshwater -	4	4		Mevagissey -	5	5
	Alum Bay -	4	4		Gorran Haven -	10	10
	Totland -	6	6		Port Looe -	5	—
	South Yarmouth -	6	6		Gerrans Bay -	5	—

Table 27.—continued.

District or Division.	Station.	Belts.	Lines.	District or Division.	Station.	Belts.	Lines.
GREAT BRITAIN.—continued.				IRELAND.—continued.			
Falmouth	St. Anthony	2	2	Carrickfergus	Glendarm	5	5
	St. Mawes	5	3		Larne	5	5
	Falmouth	5	5		Port Muck	5	5
	Porthillick	5	5		Carrickfergus	5	5
	Coverack	5	5		Whitehouse	5	5
	Cadgwith	5	5	Donaghadee	Cultra	5	2
	Mullion	5	5		Clandeboyne	5	2
Penzance	Prussia Cove	5	5		Bangor	5	2
	Penzance	10	—		Groomsport	5	2
	Mousehole	5	—		Orlock Hill	5	3
	Sennen Cove	2	2		Donaghadee	5	3
	Pendeen Cove	5	5		Millisle	5	3
St. Agnes	Portreath	11	5		Roddens	7	3
	St. Agnes	11	5		Bur Point	4	2
Padstow	New Quay	5	4		Ballywalter	5	2
	Mawgan Porth	3	2		Cloghy	6	3
	Trevose Head	2	2	Strangford	Tara	5	5
	St. George's Cove	6	—		Killard	5	5
	Trebetherick	1	—		Gunn's Island	5	5
	Port Isaac	7	5	Newcastle	Ardglass	7	5
	Boscastle	9	5		Killough	9	3
	Bude	5	4		Tyrella	11	—
Barnstaple	Clovelly	10	—		Newcastle	13	8
	Ilfracombe	7	—		Annalong	9	2
	Lynmouth	6	—		Leestones	6	5
Bridgewater	Minehead	8	8	Carlingford	Cranfield	5	5
	Watchet	8	8		Carlingford	5	5
	Weston-super-Mare	6	6	Dundalk	Giles Quay	5	5
	Weeke River	5	5		Soldiers' Point	5	5
Swansea	Penarth	7	7		Black Rock	11	12
	Barry	3	3		Dunany Point	5	5
	Porthcawl	3	3		Clogher Head	5	5
	Mumbles	8	6	Malahide	Nanny Water	5	—
	Oxwich	2	2		Balbriggan	5	5
	Penbrey	7	6		Skerries	3	3
Milford	Tenby	6	2	Dublin	Clontarf	5	5
	Pembroke Dock	3	3		Ringsend	5	—
	Newport	3	3		Kingstown	5	—
	St. Dogmaels	8	—		Bray	5	5
	New Quay	7	7		Greystones	5	5
Bangor	Carnarvon	5	—	Arklow	Five Mile Point	5	5
	Holyhead	5	5		Wicklow Head	5	5
	Amlwch	5	5		Jack's Hole	5	5
	Bangor	5	5		Mizen Head	3	3
	Conway	3	3		Arklow	5	5
	Rhyl	4	4		Kilmichael	5	5
	Prestatyn	1	1		Ballymoney	5	5
Chester	Hoylake	5	5		Courtown	5	5
	Waterloo	5	5		Cahore	5	5
Fleetwood	Bispham	2	—	Wexford	Morris Castle	6	6
	Morecambe	10	2		Curracloe	6	6
Whitehaven	Whitehaven	7	2		Ballygeary	5	5
	Maryport	7	2		Carnsore	1	1
Carlisle	Carsethorn	5	5		Kilmore	8	8
Stranraer	Drumore	6	2		Bar of Lough	5	5
	Port Logan	4	2		Bannow	3	—
	Port Patrick	6	2	Waterford	Fethard	5	5
	Stranraer	6	2		Arthurstown	11	11
	Cairnryan	7	2		Dunmore	5	5
Greenock	Lamlash	5	5		Ballymacaw	5	5
	Ardrossan	2	2		Bonmahon	5	5
	Gourock	1	1	Youghal	Ballinacourty	5	—
					Helwick Head	5	5
					Ardmore	2	—
					Youghal	2	2
					Knockadoon	5	5
IRELAND.				Queenstown	Ballycotton	4	4
Ballycastle, Antrim	Portrush	5	5		Ballycroneen	5	5
	Port Balintrae	5	5		Poor Head	5	2
	Port Ballintoy	5	5		Roche Point	5	—
	Ballycastle	5	5		East Ferry	5	—
	Tort Head	5	5		Crosshaven	8	—
	Cushendun	5	5				
	Cushendall	5	5				

Table 27—continued.

District or Division.	Station.	Belts.	Lines.	District or Division.	Station.	Belts.	Lines.
IRELAND—continued.				IRELAND—continued.			
Kinsale - - -	Robert's Cove - -	10	5	Westport - - -	Pigeon Point - -	5	5
	Oyster Haven - -	5	5		Innislyre - -	6	6
	Upper Cove - -	5	5		Innisgowla - -	5	5
	Old Head - -	5	5				
	Howstrand - -	5	5	Keel - - -	Achil Beg - -	5	3
	Courtmacsherry - -	8	8		Keel - -	5	3
	Barry's Cove - -	8	5				
	Dunny Cove - -	3	3	Belmullet - - -	Tulloughau - -	5	5
	Dirk Cove - -	5	-		Claggan - -	5	5
Skibbereen - -	Milk Cove - -	5	5		Binghams Town - -	5	5
	Union Hall - -	10	10		Ballyglass - -	5	5
	Castletownsend - -	2	2	Ballycastle (Killala) -	Dunkeehan - -	5	5
	Barlogue - -	5	5		Belderig - -	5	5
	Baltimore - -	5	5		Ballycastle - -	5	5
	Skull - -	5	5		Kilcummin - -	5	5
	Crookhaven - -	5	5		Ross - -	5	5
Bantry - - -	Dunbeacon - -	6	6	Pulleniva - -	Inniscrone - -	5	5
	Blue Hill - -	6	6		Pullocheney - -	5	5
Castletown - -	Castletown - -	7	7		Pulleniva - -	5	5
	Cahirmore - -	5	5		Portavad - -	5	5
	Ballycrovane - -	3	3	Mullaghmore - -	Rosses Point - -	5	5
	Colaris - -	5	5		Rackley - -	6	-
	Adrigole - -	3	3		Streedagh - -	6	-
	Laurence Cove - -	3	3		Mullaghmore - -	9	3
Westcove - -	Westcove - -	5	5	Killybegs - -	Dooran - -	5	-
	Waterville - -	5	5		Tribane - -	5	5
	Lackeen - -	6	6		Killybegs - -	5	2
Knightstown - -	Balliniskilligs - -	6	6		Teelin - -	5	5
	Port Magee - -	3	3		Malinmore - -	5	5
	Knightstown - -	6	6	Rutland - -	Portnoo - -	8	2
	Cahiriveen - -	3	3		Cowie Head - -	3	-
	Kells - -	5	5		Arranmore - -	3	2
	Cromane Point - -	6	6		Rutland - -	6	-
	Ventry - -	5	5		Guidore - -	5	2
	Ferriters Cove - -	5	5	Rathmullen - -	Knockalla - -	5	5
	Ballydavid - -	5	5		Rathmullen - -	7	-
	Brandon - -	5	5		Bincrana - -	5	-
	Castle Gregory - -	5	5	Carn - - -	Malin Head - -	5	5
Ballyheighe - -	Barrow - -	6	6		Glengad Head - -	5	5
	Ballyheighe - -	6	6		Port Kinnigoe - -	5	5
	Cashen River - -	6	6		Innishowen Head - -	5	5
Kilrush - - -	Ballylongford - -	5	5		Greencastle - -	7	7
	Tarbert - -	7	-		Moville - -	7	-
	Cappah - -	7	5	ISLE OF MAN.			
	Kilcredane - -	8	-	Isle of Man - -	Douglas - -	4	4
	Kilkee - -	5	-		Peel - -	5	5
Seafield - -	Seafield - -	7	7	SCILLY ISLANDS.			
Galway - - -	North Arran - -	7	7	Scilly - - -	St. Mary's - -	7	7
	Ballyraughan - -	4	4		St. Agnes' - -	4	4
	Ardfry - -	5	5		St. Martin's - -	4	-
	Barna - -	10	10				
	Costello Bay - -	5	5				
	Lettermore - -	6	6				
	Mynish - -	3	3				
Clifden - -	Roundstone - -	5	5				
	Bunown - -	3	3				
	Bayleek - -	5	5				
	Errislannon - -	3	3				
	Claggan - -	5	5				
	Aughros Point - -	3	3				
	Killeries - -	5	5				

SUMMARY.

	Stations.					Belts.					Lines.				
	1861.	1862.	1863.	1864.	1865.	1861.	1862.	1863.	1864.	1865.	1861.	1862.	1863.	1864.	1865.
In England and Wales -	24	52	87	226	327	104	243	398	1,113	1,147	104	246	402	1,066	891
In Ireland - -	30	48	69	137	181	77	145	307	634	968	77	140	298	631	758
In Scotland - -	8	13	23	37	48	25	41	77	132	194	25	41	76	131	159
In Isle of Man - -	—	1	2	2	2	—	5	10	10	9	—	5	10	10	9
Total - -	62	114	181	402	553	206	434	792	1,889	2,318	206	432	786	1,838	1,817

Table 28. Sums paid out of the MERCANTILE MARINE FUND TOWARDS SAVING LIFE FROM SHIPWRECK, distinguishing Payments to Crews of LIFE BOATS, and Rewards and Gratuities to FISHERMEN and others, and Sums paid for the Maintenance of the ROCKET AND MORTAR APPARATUS.

By the 459th section of the "Merchant Shipping Act, 1854," Salvage for Life is paid in priority to all other claims for Salvage, and the Board of Trade is empowered to grant remuneration out of the Mercantile Marine Fund to persons saving Life where such Salvage is insufficient; and by the 418th section of that Act the Board of Trade is also empowered to grant sums for establishing and maintaining Life Boats, with the necessary crews and equipments, on the coasts of the United Kingdom; under the sections quoted, the following sums have been granted during the past year, and paid in part direct by the Board of Trade, and partly through the medium of the Royal National Life Boat Institution, as distinguished below.

Month in which Payment made.	Payments to Crews of Life Boats for Exercise, and Coxswains' salary.		Payments to Crews of Life Boats for Services at Wrecks.		Rewards and Gratuities to Fishermen and others.		Payments for providing and maintaining Rocket and Mortar Apparatus.	Total Payments.
	By Board of Trade direct.	By Board of Trade through National Life Boat Institution.	By Board of Trade direct.	By Board of Trade through National Life Boat Institution.	By Board of Trade. direct.	By Board of Trade through National Life Boat Institution.		
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
January - -	32 14 0	526 10 0	28 10 0	682 19 6	103 0 0	—	10 3 9	1,383 17 3
February - -	—	—	19 0 0	—	71 0 0	—	274 2 9	364 2 9
March - -	18 0 0	—	309 10 0	—	23 10 0	—	577 5 11	928 5 11
April - -	41 3 0	526 10 0	—	453 2 8	124 1 1	—	667 19 10	1,812 16 7
May - -	—	—	—	—	—	—	251 7 4	251 7 4
June - -	—	—	9 10 0	—	—	—	237 5 3	246 15 3
July - -	26 19 0	531 0 0	61 10 0	130 1 0	—	—	437 5 3	1,186 15 3
August - -	—	—	—	—	—	—	419 11 10	419 11 10
September -	—	—	—	—	—	—	481 9 6	481 9 6
October - -	22 8 0	535 10 0	9 10 0	43 13 0	—	—	536 0 0	1,147 1 0
November -	5 11 0	—	—	—	—	—	542 17 9	548 8 9
December -	18 0 0	—	120 0 0	—	47 2 10	—	803 0 0	988 2 10
Total in 1865	164 15 0	2,119 10 0	557 10 0	1,309 16 2	368 13 11	—	5,238 9 2	9,758 14 3
Total in 1855 -	11 0 0	571 3 8	60 0 0	141 10 6	128 0 0	325 12 6	—	1,237 6 8
Total in 1856 -	29 19 0	744 10 0	—	285 10 8	149 10 0	179 4 0	—	1,388 13 8
Total in 1857 -	45 4 0	802 7 5	13 0 0	188 16 0	137 0 7	254 15 0	2,751 15 11	4,192 18 11
Total in 1858 -	40 15 0	1,113 11 11	6 10 0	319 9 6	311 19 6	71 0 0	2,024 17 7	3,888 3 6
Total in 1859 -	70 16 0	1,309 10 0	8 10 0	686 16 0	377 17 6	—	1,943 7 0	4,396 16 6
Total in 1860 -	105 3 0	1,484 10 0	—	952 3 3	813 5 6	—	2,456 15 8	5,811 17 5
Total in 1861 -	242 5 0	1,751 0 0	296 0 0	1,076 3 2	753 16 6	—	2,246 6 4	6,365 11 0
Total in 1862 -	166 3 0	1,876 10 0	88 10 0	809 3 10	449 14 9	—	2,239 13 5	5,629 15 0
Total in 1863 -	110 8 0	1,975 10 0	362 6 0	867 16 9	371 0 0	—	3,037 16 10	6,724 7
Total in 1864 -	124 17 0	1,984 10 0	374 10 0	1,017 5 0	271 4 6	—	3,888 7 6	7,660 14 0
Total in 1865 -	164 15 0	2,119 10 0	557 10 0	1,309 16 2	368 13 11	—	5,238 9 2	9,758 14 3
Total for 11 Years	1,111 5 0	15,732 13 0	1,766 16 0	7,654 10 10	4,132 2 9	830 11 6	25,827 9 5	57,055 8 6

NOTE.—In addition to the total sums paid as above, further sums were paid by the Board of Trade to the National Life Boat Institution in aid of their funds, as follows :—

	£ s. d.
In 1856 - - - - -	961 13 4
In 1857 - - - - -	827 15 4
In 1858 - - - - -	634 19 8
In 1859, in aid of establishing new Life Boats - - -	200 0 0
In 1860 ditto - - - - -	50 0 0
In 1861 ditto - - - - -	50 0 0
In 1862 - - - - -	100 0 0
Total - - - - -	2,824 8 4

Table 29. List of PERSONS, Subjects of GREAT BRITAIN and its Dependencies, to whom REWARDS have been granted by the BRITISH GOVERNMENT for gallant Services in SAVING LIFE FROM SHIPWRECK, &c., during the Year 1865; distinguishing, I. Services rendered at Sea by one Ship to another, or to the Crew of another; II. Services rendered by Fishing Smacks and Salvage Smacks; and III. Services rendered by Boats from the Shore, or by Lines from the Shore, or by Swimming, or by putting off from Shore; Chronologically arranged according to the Dates of Service.

NOTE.—The rewards granted in the case of services rendered at sea and abroad are paid for out of a Parliamentary vote, and where Foreigners are concerned are determined and given by the Foreign Office and the Board of Trade. The rewards given for services rendered on the Coasts of the United Kingdom are paid for out of the Mercantile Marine Fund, and are determined and given by the Board of Trade.

I.—Services rendered at Sea by one Ship to another, or the Crew of another.

Names of Persons.	Nature of Services rendered.	Date of Services rendered.	Description of Reward granted.	Out of what Fund granted.
Captain William Jamieson, master of the ship "Tara" of Liverpool.	Rescuing from their boat the crew (15 in number) of the ship "Tamerlane" of Aberdeen. Captain Jamieson hearing voices hailing, but being unable to discern anything on account of the thickness of the weather, put his ship about, when a boat came alongside with the crew so much exhausted that they had to be hauled on board by ropes. Part of them were afterwards transferred to two other vessels, and the remainder were landed by the "Tara" at St. John's, Newfoundland.	Sept. 18, 1861 -	A telescope, value 5 <i>l.</i> 5 <i>s.</i>	Public vote.
James Winter, Esq., owner of the brig "Sea Nymph."	Promptly proceeding from Tamatave to Port Dauphin, on the south coast of Madagascar, and rescuing the crew of the wrecked vessel "Pera" of Liverpool, who were remaining there in a state of destitution, and with little chance of being taken off. Mr. Winter was on board his vessel at Tamatave, about to proceed to Natal, when a boat's crew from the "Pera" arrived, and at the request of Her Majesty's Consul, he, at considerable inconvenience and without seeking to make any arrangement as to remuneration, at once proceeded to Port Dauphin and took the shipwrecked crew to Natal.	Oct. 1864 -	A gold watch, value 26 <i>l.</i> 5 <i>s.</i> ; subsistence, 23 <i>l.</i> 14 <i>s.</i> 6 <i>d.</i> ; and 70 <i>l.</i> for loss of anchors, cables, &c.	Public vote.
Captain Griffith Evans, master of the ship "Principality" of Aberystwith.	Rescuing from their sinking vessel the crew (nine in number) of the brig "Anne." Captain Evans, seeing the condition of the "Anne," bore down to her assistance, and finding it impossible, on account of the heavy sea, to take off the crew by means of the boats, he lay by the vessel till next day, when the weather having moderated, he got them on board, and after treating them with the greatest kindness, landed them at Weymouth. Two vessels had previously passed the "Anne" without taking any notice of her.	Oct. 23, 1864 -	A telescope, value 5 <i>l.</i> 5 <i>s.</i>	Public vote.

Names of Persons.	Nature of Services rendered.	Date of Services rendered.	Description of Reward granted.	Out of what Fund granted.
Captain James Ellis, master of the ship "India" of South Shields.	Rescuing by means of his boats, at considerable risk, the crew (21 in number) of the ship "Theodore," of Liverpool, and subsisting them for 20 days. Captain Ellis had on board at the time 10 of the crew of the vessel "Oregon" whom he had taken from the barque "Collina" of Cork.	Oct. 30, 1864 -	A telescope, value 5 <i>l.</i> 15 <i>s.</i> 6 <i>d.</i> Subsistence, 23 <i>l.</i>	Public vote.
Captain John A. Hill, master of the ship "Shannon."	When bound to Mauritius, Captain Hill, in lat. 13° N., fell in with the ship "British Lion" of Shields in a leaky state, and as the leak showed a disposition to increase, he, after arranging signals with the master of the "British Lion" and getting his lifeboat in readiness, to which he appointed a picked crew, kept company with the leaky ship for 53 days, till she could be kept afloat no longer, when he took off the crew, and 29 days afterwards landed them at Mauritius.	Sept. 3 to Nov. 21 1864.	A gold chronometer, value 52 <i>l.</i> 10 <i>s.</i>	Public vote.
Captain Edward Scott, master of steam ship "St. Andrew" of Montreal.	Picking up the master and crew of the "Clarinda" of Aberdeen (10 persons), which vessel was wrecked on the island of Anticosti, and landing them at Glasgow.	Nov. 17, 1864 -	A telescope, value 5 <i>l.</i> 5 <i>s.</i>	Public vote.
Captain W. McMickan, master of the steamship "Sidon."	Bearing down to the assistance of the barque "Elleragill" of Hull, in answer to a signal of distress, when that vessel was in a sinking state in the Bay of Biscay. The crew of the "Elleragill" came alongside in their own boat, were received on board, and kindly treated by Captain McMickan, who landed them at Gibraltar.	Nov. 21, 1864 -	A telescope, value 5 <i>l.</i> 15 <i>s.</i> 6 <i>d.</i>	Public vote.
Captain Daniel Wilson, master of the barque "Chaudiere" of London.	Receiving on board his vessel the master and crew (18 persons) of the ship "Echo" of Liverpool, which was fallen in with in lat. 48° 47' N. long. 59° 58' W. in a waterlogged and unmanageable state. The rescued men were conveyed to London in the "Chaudiere."	Nov. 23, 1864 -	A telescope, value 5 <i>l.</i> 15 <i>s.</i> 6 <i>d.</i>	Public vote.
Captain John Eynon, master of the steam ship "City of Dublin." Mr. Peter Fletcher, second mate. And to 10 of the crew who manned the boat.	The ship "Burnside" of Greenock, while on a voyage from New York to Liverpool, became waterlogged, and was struck by a heavy sea which caused her to heel over, and eight of her crew were washed overboard. She afterwards righted, but two more were washed away, and two died from exposure. The remaining three, after enduring the greatest sufferings from cold and exposure for six days, were rescued by the "City of Dublin," about 900 miles west of Cape Clear. On account of the heavy sea running, and the danger of approaching the wreck, the rescue of the survivors was attended with great difficulty and danger to Mr. Fletcher and the boat's crew.	Dec. 17, 1864 - - - - - - -	A telescope, value 5 <i>l.</i> 15 <i>s.</i> 6 <i>d.</i> A quadrant, value 5 <i>l.</i> 5 <i>s.</i> 10 <i>s.</i> each.	Public vote.
Captain William Davis, master of the brig "Dolphin" of St. John's, Newfoundland.	While on a voyage from Liverpool to Newhaven, Connecticut, the brigantine "Mary A. Vernon" of St. John, N.B., sprung a serious leak. In lat. 39° 19' N. long. 68° 25' W. she spoke the brig "Dolphin" of St. John's, Newfoundland, and at the request of the master of the "Mary A. Vernon," Captain Davis, lay by her for some time, and afterwards received the crew on board, when they found it necessary to abandon their vessel. Every kindness was shown them by Captain Davis, who landed them at New York, and declined to receive compensation.	1864 -	A telescope, value 5 <i>l.</i> 15 <i>s.</i> 6 <i>d.</i>	Public vote.

Names of Persons.	Nature of Services rendered.	Date of Services rendered.	Description of Reward granted.	Out of what Fund granted.
The master and crew (10 persons) of the smack "Closson" of Grimsby.	The brig "Jannett" of Sunderland met with bad weather and became leaky, but on running for the Firth of Forth she picked up the crew (seven men) of the brig "Rhine" of Sunderland, which had been abandoned in a sinking state. The two crews were unable to keep the "Jannett" afloat, and a signal of distress was hoisted, when the smack "Closson" bore down to their assistance and succeeded in taking on board the two crews.	Nov. 26, 1864 -	15 <i>l.</i> , and 3 <i>l.</i> for repairs to boat.	Public vote.
Randel Bridge, master - William Hoyle, mate - Richard May } Seamen. Alfred Webb } John William } John Goole } Boys. Edward Davis } Crew of the smack "Violet" of Yarmouth.	The brig "Luna" of Sunderland sustained considerable damage to her hull, and lost her boats. When in this disabled state the smack "Violet" succeeded, by means of a small boat, in taking off her master and crew, seven persons. The rescue was effected at much risk from the state of the weather and heavy sea.	Dec. 4, 1864 - - - - - - - - - - - - -	2 <i>l.</i> - - - 2 <i>l.</i> - - - 2 <i>l.</i> - - - 2 <i>l.</i> - - - 1 <i>l.</i> - - - } 10 <i>s.</i> each - -	Public vote.
The crew of the fishing smack "Martha" of Hull.	Leaving their fishing ground and proceeding to Hull with 10 of the crew of the steamship "Tartar" of Hull, whom they received on board from the Dutch galliot "Grietje Kolno," by which vessel the crew and passengers of the "Tartar" had been rescued from their boat after abandoning their vessel.	Dec. 9, 1864 -	25 <i>l.</i> as compensation	Public vote.
Thomas Crane, master - Richard Young - Thomas Goodyear - Samuel Fisher - William Gane - Crew of the smack "Queen" of Harwich.	The brigantine "Thor" of Copenhagen struck on the Gunfleet Sand; the crew clung to the wreck, until they were rescued by a boat from the smack "Queen" of Harwich. The rescue was attended with great risk in consequence of the broken water and floating wreck.	Dec. 24, 1864 - - - - - - - - - - - - -	1 <i>l.</i> each, and 3 <i>l.</i> for damage to the boat.	Public vote.
George Hoole, master - Five seamen and three apprentices, crew of the smack "Wanderer" of Grimsby.	The smack "Fifeshire" of London was fishing, when she was struck by several heavy seas, which washed overboard the mate and filled the vessel. On the following day her signals of distress were seen by the "Wanderer," which bore down to her assistance, and lay by her some hours, but being unable to save her, launched the boat and took out the crew and landed them at Grimsby.	Jan. 7, 1865 - - - -	15 <i>l.</i> to be divided -	Public vote.
The master and crew of the smack "Endeavour" of London, 10 persons.	The smack "Waterwitch" of London was disabled during a gale, and one of the crew was washed overboard and drowned. At great risk the smack "Endeavour" launched her boat, and in three trips took off the remainder of the crew and conveyed them to Grimsby.	Jan. 7, 1865 -	15 <i>l.</i> - - -	Public vote.
The owner of fishing smack "Newark" of Hull.	The smack "Olive" of Grimsby foundered after being in collision. The crew took to their boat, from which they were picked up by the "Newark," which lost four days fishing in landing the shipwrecked men and returning to the fishing ground. Since the "Newark" rendered this service she and her crew have been lost.	Jan. 27, 1865 -	10 <i>l.</i> as remuneration for loss of fishing.	Public vote.

Names of Persons.	Nature of Services rendered.	Date of Services rendered.	Description of Reward granted.	Out of what Fund granted.
John Pritchard, master - Owen Pritchard } Pilots. Anthony Little } Robert Silcock } Richard Courtenay. } Apprentices. Thomas Lea } These 5 men manned the punt when she proceeded to the "Anne and Mar- garet."	The "Pilot" schooner, No. 9, of Liverpool, fell in with the sloop "Anne and Margaret" in a disabled state, and by means of the punt took off the crew (two in number). A few hours later she fell in with a boat contain- ing the crew (two men and a boy) of the flat "Treffryn Trader," which had been aban- doned in a sinking state off Great Ormes Head. The boat being without oars the punt was again launched, and the flat's crew were taken out of their boat. The Liverpool Ship- wreck and Humane Society have awarded silver medals to Jones, Little, Silcock, and Owen Pritchard, 2 <i>l.</i> to Thomas Lea, and 1 <i>l.</i> each to Courtenay and Hetherington; also 5 <i>l.</i> to the owners of the schooner for damage done to her punt; and have passed a vote of thanks to Mr. John Pritchard, the master, to be presented to him on vellum.	Jan. 30, 1865 - - - - - - - - - - - - - - - -	10 <i>l.</i> to be divided -	Mer. Mar. Fund.
John Jones, pilot - Thomas Lee } Apprentices. Jonathan Hetherington. } These three men manned the punt when she pick- ed up the crew of the "Treffryn Trader."		- - - - - - - - -		
Joseph Collins, master - John Garrard, mate - James Crawley - William Ward - Joseph Noles - John Fisher - William Williams - Seamen of the smack "Pearl" of Grimsby.	The brig "Elizabeth Wilthew" of Sunderland sprung a leak when off Christiansand, and fell over on her beam ends. Two days later, when in lat. 55 N. long. 2 E., she spoke the "Pearl" of Grimsby, the latter manned a boat, and in two trips took off the crew of the disabled vessel.	Jan. 30, 1865 - - - - - - - - - - - - - - - -	30 <i>l.</i> - -	Public vote.
John Powell, owner and master of the smack "Lord Howe" of Col- chester and crew; (five men).	The brigantine "Mayflower" of Whitstable struck on the Mid- dle Sand in the Swin, and filled as the tide made. The crew took to their boat, but the vessel rolled over and sunk her, drown- ing one man; the others (four) got on the rigging, from which they were rescued by the "Lord Howe." There was not much risk incurred by the smack, but she had to leave her fishing to land them at Whitstable.	Feb. 10, 1865 -	10 <i>l.</i> - -	Mer. Mar. Fund.
The master and crew of the smack "Closson" of Grimsby.	The smack "Briton" of Gains- borough was fishing in the North Sea, when she was struck by a heavy sea which filled her with water. Next day the smack "Closson" bore down, and with difficulty picked up the crew, who had abandoned their vessel.	Feb. 20, 1865 -	5 <i>l.</i> - -	Public vote.
The master and crew (nine persons) of the fishing lugger "Providence" of Sherringham.	The ketch "West Kent" of Ro- chester capsized off Cromer during a squall. The mate was drowned. The master, his wife, and one seaman, who were floating on the water, were picked up by the "Providence," and were conveyed to Yar- mouth.	June 11, 1865 -	5 <i>l.</i> between them -	Public vote.
The master and crew of the smack "Lord Wil- loughby" of Ramsgate.	Taking on board the smack the master and crew (seven hands) of the brig "Chance" of Sun- derland, which foundered off the Newarp Light Ship. The res- cued men were two days on board the smack.	Oct. 19, 1865 -	10 <i>l.</i> - -	Public vote.
Randal Bridge, master - John Welham, mate - Isaac Smith } Seamen. James Balls } Arthur Durrant } William Taylor } Apprentices. Robert Redding } Charles Brown } Crew of the smack "Violet."	The "Friends" was disabled off the Dutch coast; the smack "Violet" offered assistance, and put a man on board, but the wind increasing the man re- turned to the "Violet," and also the crew of the "Friends," who were taken off their vessel by a boat from the "Violet." The "Friends" foundered next morning.	Oct. 20, 1865 - - - - - - - - - - - - - - - -	5 <i>l.</i> to be divided -	Public vote.

III.—Services rendered by Boats from the Shore, or by Lines from the Shore, or by Swimming or putting off from the Shore.

Names of Persons.	Nature of Services rendered.	Date of Services rendered.	Description of Reward granted.	Out of what Fund granted.
John Mark, constable -	The schooner "Superior" of Whitehaven, having been in collision with a steam ship and sustained much damage, became unmanageable, and ran ashore near Wicklow. Constable Mark waded into the sea and hailed the master to throw him a rope, which was done, and by means of which he hauled the master and two boys through the surf, one other boy having been drowned in attempting to swim ashore.	Oct. 4, 1864 -	Bronze medal and 2l.	Mer. Mar. Fund.
W. W. Guy - - - George Kelway - - - William Wilson - - - Jesse Etherington - - - William E. Edsall - - - Thomas J. Symes - - -	The brigantine "Belinda" of Jersey sprung a leak, and was run ashore near Dungeness. A passenger and one of the crew were washed overboard and drowned. The master and remainder of crew (six persons) were rescued from a perilous position by the Coastguard at Dungeness, who launched their galley, and at much risk proceeded to the wreck.	Nov. 17, 1864 - - - - - - - - - - - - - - - -	1l. each - - -	Mer. Mar. Fund.
Alexander Laming - - - William Webb - - - Henry Webb - - - Thomas Bingham - - - John Arnold - - - Watermen of Kingsdown.	The schooner "Devonport" of Teignmouth parted from her anchors in the Downs during a gale, and drove on shore near Kingsdown. The five watermen with much difficulty and at great risk launched a boat, and succeeded in rescuing the schooner's crew.	Nov. 24, 1864 - - - - - - - - - - - - - - - -	1l. each - - -	Mer. Mar. Fund.
Lawrence Byrne, chief officer of Coastguard. John Conaty - - - Richard Miller - - - Philip Bede - - - Coastguard men, Tyne-mouth. The widows of James Grant and Edwin Robson, two of the crew of the lifeboat "Constance."	The steam ship "Stanley" of Aberdeen, when running for the Tyne for shelter, struck upon the Black Midden's Rocks, and became a complete wreck. The life boats attempted to approach the wreck, but were unable to do so from the violence of the wind and sea. Eventually communication was obtained by means of a rocket, and the survivors (36 persons) were landed; 24 persons having previously been washed overboard and drowned. The Coastguard men engaged incurred great risk of life. During the same night the life boat "Constance," in endeavouring to rescue persons in distress in this and other vessels, was driven alongside the schooner "Friendship" of Colchester, and sustained considerable damage, two of her crew being drowned.	Nov. 24, 1864 - - - - - - - - - - - - - - - -	10l., and a letter of thanks to each. 25l. each - - -	Mer. Mar. Fund.
Mrs. McGuin, widow of the late Peter McGuin.	During a violent gale the schooner "Havelock" was driven ashore near Kirkeudbright; the crew were drowned. Peter McGuin, while endeavouring to effect a communication with the vessel, was washed away by a sea.	Nov. 30, 1864 -	15l. - - -	Mer. Mar. Fund.
Edward Evans, master of the steam-tug "Constitution" of Liverpool. Crew (eight men) - Susan Hughes, widow - Ann Hughes, 13 years - William Hughes, 10 years - Hugh Hughes, 5 years - Children of William Hughes, deceased.	The Holyhead life boat had been out to the assistance of a vessel, and when returning was capsized. One of the crew (W. Hughes) was drowned; three others were picked up by the tug; the others succeeded in holding on to the boat. The master of the tug deserves great praise, as being unacquainted with the bay he ran great risk of losing his vessel and the lives of his crew.	Jan. 14, 1865 - - - - - - - - - - - - - - - -	2l. - - - 1l. each - - - 10l. - - - 5l. each - - -	Mer. Mar. Fund.

Names of Persons.	Nature of Services rendered.	Date of Services rendered.	Description of Reward granted.	Out of what Fund granted.
Major F. W. Festing, R.M.A. Twelve fishermen belonging to Hayling and Portsmouth.	The schooner "Ocean" of Plymouth encountered bad weather, and in running for Portsmouth got too far to leeward and struck upon the East Winner Sand, off Hayling Island, and became a total wreck. The crew (five men) took to the rigging, from which two were washed off and drowned. A boat was manned by Major Festing and 12 fishermen, who at great risk rescued the survivors. Major Festing arranged the means of rescue, and took the stroke oar.	Jan. 14, 1865 - - - -	A silver medal - 3l. each - -	} Mer. Mar. Fund.
Benjamin Rattan, commissioned boatman of coastguard, since promoted to chief boatman in consequence of this service. James Reilly - - - Patrick Reilly - - - John Connor - - - James Roe - - - Labourers.	The "Lady Hobart" of Liverpool, went ashore near Malahide during a heavy gale; nine of the crew left her in their life boat and landed on the beach. The boat, which was bilged and making much water, was then manned by the five men rewarded, who at great risk pulled through the surf, reached the wreck, and took off the remainder of the crew (13 persons).	Jan. 29, 1865 - - - - - - - - - -	1l. each - -	
William Simpson, chief boatman. Henry Ellis, commissioned boatman. William Yole - - - Michael Leary - - - Boatmen, Bude.	The schooner "Endeavour," in running for Bude, got on the rocks, the night being very dark and the sea running very high. The crew (three men) were rescued by the Coastguard by means of the rocket apparatus.	Feb. 24, 1865 - - - - - - -	10s. each - -	Mer. Mar. Fund.
The young company of beachmen, Gorleston.	During a heavy gale the brig "Edgar" of Hartlepool parted from her anchor in Yarmouth Roads, and drove on to the North Sand. The beachmen at great risk put off in their life boat, but were unsuccessful in their attempts to get alongside. The "Edgar" subsequently drove on to the beach, and the crew were rescued by the mortar apparatus.	March 20, 1865 - - - -	5l. and a dozen life belts.	Mer. Mar. Fund.
Mr. Boxall, chief officer of coastguard. D. Thompson, chief boatman of coastguard, Bridport.	The "Black Diamond" of Cork was stranded near Bridport Harbour. Communication was established with the wreck by means of the mortar apparatus; the chief officer, at considerable risk, got on board and succeeded in bringing on shore the mate, whose leg was broken, and also a boy. The remainder of the crew were also saved by Mr. Boxall and his chief boatman, who went into the surf to their assistance.	Nov. 20, 1865 - - - -	10s. each - -	Mer. Mar. Fund.
James Westlake, coastguardman. George Battrick, labourer, St. Alban's Head.	The "Virginie" of Lannion parted from her cables and was drifting towards the shore when the crew left in their boat, but before reaching the shore she capsized. The master was saved by Westlake, who went into the surf, and, with the assistance of Battrick, brought him on shore. The other three were lost.	Nov. 21, 1865 - - - -	10s. 5s.	} Mer. Mar. Fund.
William Simpson, chief boatman. Henry Ellis, boatman - Michael Leary, boatman - Frederick Thorn, carpenter William Spearman, shipwright. Ross Heard, mason - George Cobbedick, mason George Johnson, pilot - John Cornish, pilot - John Hallett, pilot - William Gole, boatman - William Petherick, mariner	The "Georgina" of Glasgow was stranded off Sandymouth, near Bude, and six of the crew jumped overboard and attempted to swim to the shore; the 12 men rewarded waded out with life lines, and succeeded in rescuing four of the six. The remainder of the crew, eight in number, were got on shore at $\frac{3}{4}$ ebb by means of a rope from the ship attached to life lines.	Oct. 25, 1865 -	10s. each - -	

Table 30. List of PERSONS (Natives of Foreign Countries) to whom REWARDS have been granted by the BRITISH GOVERNMENT for gallant Services in SAVING LIFE FROM SHIPWRECK, &c., during the Year 1865.

Names of Persons.	Nature of Services rendered.	Date of Services rendered.	Description of Reward granted.	Out of what Fund granted.
Captain G. M. Dayton, of the American schooner "Highlander."	Picking up from their boat, from which they were unable to land on account of the heavy sea, the crew of the barque "Pearl" of Shields, which had been abandoned in a sinking state. While on board the "Highlander" a landing might have been effected, but Captain Dayton kindly took them to New York, which they would have had great difficulty in reaching from where they were, and also in obtaining provisions.	Oct. 29, 1863 -	A gold watch, value 26 <i>l.</i> 5 <i>s.</i>	Public vote.
The crew of Dutch pilot boat No. 6. The crew of the Hinsdinner life boat.	Rescuing master and crew (5 persons) of the "Lady Mary Stewart" of Wigtown, on the stranding of that vessel near Texel Island, and landing them at Mienwediepe.	Nov. 1, 1863 - - - -	12 <i>l.</i> - - - 8 <i>l.</i> - - -	} Public vote.
Captain Pharo of the Norwegian ship "Vinterin."	The barque "Rondinella" of Sunderland was in a leaky state, and her crew fearing she would founder, were taken off by the barque "Prince Frederick William" of Aberdeen. As the Rondinella did not sink, she was taken in tow by the "Prince Frederick William," and five men were sent on board to navigate her, but during the night the tow rope parted, and the vessels lost sight of each other. The five men were then rescued by Captain Pharo, who treated them very kindly while on board his vessel, and landed them at Dover.	Dec. 11, 1863 -	A telescope, and 10 <i>l.</i> for subsistence.	Public vote.
Captain Van Schoote, of the Belgian brig "Victor" of Ostend.	Seeing a signal of distress flying from the brig "Samuel" of Whitehaven, Captain Van Schoote made all sail to come up to her assistance, and finding she was in a sinking state he received the crew on board his vessel, and landed them at Waterford.	Dec. 30, 1863 -	A telescope, value 5 <i>l.</i> 5 <i>s.</i> , and 2 <i>l.</i> 2 <i>s.</i> for subsistence.	Public vote.
Captain L. S. Andrews, master of U.S. ship "Caledonia."	Taking on board, from the American ship "Calypso," four of the crew of the barque "Lady Prudoe" of Sunderland, which was wrecked about 45 miles W.N.W. of the Island of Diego Ramires, and landing them at Callao.	Aug. 3, 1864 -	Sextant, value 20 <i>l.</i> -	Public vote.
Captain H. Popplebaum, of the Bremen ship "Laura and Gertrude."	Rescuing from their wrecked vessel off the coast of Newfoundland the crew (19 in number) of the "Lanarkshire Lass," subsisting and treating them with great kindness for 29 days, when an opportunity occurred of transshipping them to the "Thalia" of London.	Sept. 16, 1864 -	A gold watch, value 26 <i>l.</i> 5 <i>s.</i> ; subsistence 39 <i>l.</i> 17 <i>s.</i> 6 <i>d.</i>	Public vote.
Captain Johan H. Huovinen, master of Finnish barque "Ukko" of Uleborg.	Picking up master and crew of the "Crusader" of Shields (11 persons), which vessel was abandoned in a sinking condition in the China Sea, and conveying them to Shanghai.	Sept. 29, 1864 -	Telescope, value 5 <i>l.</i> 15 <i>s.</i> 6 <i>d.</i>	Public vote.
Captain John Charry, master of U.S. brigantine "Oxford."	Rescuing master and crew of the "Joanna" of Alloo (18 persons), they having abandoned their ship in lat. 49° 34' N., long. 40° 14' W, she being then on fire, and conveying them to Fayal.	Oct. 9, 1864 -	Sextant, value 20 <i>l.</i> -	Public vote.

Names of Persons.	Nature of Services rendered.	Date of Services rendered.	Description of Reward granted.	Out of what Fund granted.
Eighteen Danish fishermen	Manning a life boat during the night, and taking off the crew (10 in number) of the brig "Briton" of Whitby; stranded off the Scaw.	Oct. 17, 1864 -	10s. each - -	Public vote.
Nineteen Danish fishermen	Putting off in their boats during stormy weather, and landing the master, his wife and child, and three seamen, belonging to the vessel "Prince Albert" of Yarmouth, which had stranded on the Scaw Reef.	Nov. 5, 1864 -	1l. each - -	Public vote.
Captain Paul Sövenson, of the Danish ship "Malvine."	Receiving on board his vessel the crew (five in number) of the "Jane Lawson" of Inverkeithing, who after abandoning their vessel had reached the "Malvine" in their boat. The master of the "Jane Lawson" presented Captain Sövenson with his boat (value 6l.)	Nov. 29, 1864 -	A telescope, value 5l. 5s., and 2l. for subsistence.	Public vote.
M. José Maria de Mesa, master of the Spanish steam ship "Amalia."	Proceeding from Barquero to Santa Martha, off Cape Ortegal, during heavy weather, and towing to Barquero the ship "Cleodon" of Sunderland, which vessel had been dismantled, and was riding in a dangerous situation.	Nov. 1864 -	A telescope, value 5l. 15s. 6d. Thanks of Her Majesty's Government to the Spanish authorities.	Public vote.
Captain Derrier, of the French barque "Nankin."	Rescuing master and crew (16 persons) of the "Poitiers" of Liverpool, which vessel was abandoned in a sinking condition off Cape Horn, and landing them at Callao.	Dec. 5, 1864 -	Gold chronometer, value 52l. 10s.	Public vote.
Captain L. B. Chase, master of the U.S. schooner "Alice."	Rescuing from their boat the master, his son, and five men, of the schooner "Isabella" of Pictou, N.S., wrecked off Fenwick Island, subsisting them for eight days, and refusing any compensation.	Dec. 21, 1864 -	A telescope, value 5l. 15s. 6d.	Public vote.
Gense Jean Marie - - Duval Jean Jacques - Gournay Jean Baptiste - Couvelland Antoine - Lepergue Jean Marie - Malfoy Claude - - Sergeant Louis Antoine - Fishermen of Portel, France.	Saving by great exertions, and at considerable risk, two of the crew of the vessel "True Blue" of Newport, which drove ashore off Chatillon. After their vessel stranded the crew took to their boat, but only two reached the shore, and they were saved by the gallant and humane conduct of the French fishermen.	Jan. 14, 1865 - - - - - - - - - - - - - - - - - - -	A silver medal and 100 francs. A bronze medal and 50 francs each.	Public vote.
Captain Surie, of the Dutch barque "Almonde."	The steamer "Askalon" of Liverpool was fallen in with by the "Almonde" in a sinking state in the Atlantic Ocean. Captain Surie lay by her for 27 hours, and received on board his vessel her crew and passengers (33 persons) when she was abandoned. Six persons were landed at Folkestone, and the remainder taken on to Rotterdam, and sent home by steamer to Liverpool and Hull; the greater part of them having been on board the "Almonde" for 19 days.	Jan. 15, 1865 -	A binocular glass, value 6l. 6s., and 45l. 12s. for subsistence.	Public vote.
Three French sailors } -	The schooner "Euphemie Anderson" of Perth was driven on shore near to Bayonne during a violent gale. Two of the crew were drowned; the survivors (3) were rescued by three French sailors, who at risk to themselves went into the sea, and by means of a line hauled the men ashore.	Jan. 16, 1865 -	2l. each - -	Public vote.

Names of Persons.	Nature of Services rendered.	Date of Services rendered.	Description of Reward granted.	Out of what Fund granted.
Vice Admiral Count de Gueydon, Maritime Prefect at Brest. Victor Toussaint, pilot, master of the boat. Marcel Marie Lebousse, lighter master. César Mai - Noel Marie Mai - Charles Marie Carion, seamen. Mathien Masson, apprentice	The steamship "Columbian" of Liverpool stranded on the Island of Ushant, and afterwards drifted off, and foundered near Conquet. On hearing of the disaster Admiral Count de Gueydon despatched a vessel to look out for any of the crew who might be floating on pieces of the wreck. While the "Columbian" was driving towards the coast, the six men named manned a small boat, and, heedless of the entreaties of their families and friends, put off and succeeded in saving three persons who were the only survivors out of a crew of 32. Toussaint and Lebousse received silver medals from Her Majesty's Government for saving the crew of the English cutter "Phantom" in 1861.	Jan. 17, 1865 - - - - - - - - - - - - - - - -	Thanks of Her Majesty's Government. A gold medal and 10 <i>l.</i> each. A silver medal and 6 <i>l.</i> each. A silver medal and 4 <i>l.</i>	Public vote.
Captain Meahan, of the French barque "Jean Bart."	The steamship "Beatrice" of Bristol was in a sinking state when Captain Meahan perceived her signal of distress, and went to her assistance. The crew and passengers (24 persons) reached the "Jean Bart" in their own boat; were kindly treated for two days by the French captain and crew, and then landed at La Rochelle.	Jan. 17, 1865 -	A telescope, value 5 <i>l.</i> 15 <i>s.</i> 6 <i>d.</i> , and 25 <i>l.</i> 3 <i>s.</i> 2 <i>d.</i> for subsistence, detention, &c.	Public vote.
Captain Chr. N. Hille of the Norwegian barque "Ulrikken" of Bergen."	Rescuing during the night, and with much difficulty and danger on account of the tempestuous state of the weather, the crew (14 in number) of the ship "Suzanne" of North Shields when that vessel was in a sinking state in the Bay of Biscay. In performing this service one of the Ulrikken's boats was rendered useless, and the other was much damaged.	Jan. 17, 1865 -	A telescope, value 5 <i>l.</i> 15 <i>s.</i> 6 <i>d.</i> Subsistence 8 <i>l.</i> 12 <i>s.</i>	Public vote.
Mr. Ferdinand Heis, master of a Honfleur boat. Henry Allaire - Ferdinand Lemoine - Pierre Victor Salin - Louis Desiré Catatan -	Putting off in a boat from the shore and rescuing the crew of the schooner "Mounts Bay," which had been driven into Honfleur Roads by a storm. The crew had taken to the rigging, and it was proposed to several seamen to attempt to save them, but they refused as the danger was so imminent. At length Ferdinand Heis, and the four men named manned a boat, and, after four unsuccessful attempts, they succeeded in rescuing the schooner's crew.	Jan. 27, 1865 - - - - - - - - - - - - -	A gold medal - 2 <i>l.</i> 10 <i>s.</i> each.	Public vote.
Captain A. Cappe of the Dutch barque "Judah Cappe."	Rescuing, while in lat. 38° 40' N., long. 67° 31' W., five of the crew of the brig "Iona" of St. John's, N.B., which had been struck by a heavy sea and disabled, losing also one of her crew. On sighting the disabled brig, Captain Cappe immediately bore down and took off the crew, who were in a very exhausted state, having been on the wreck for five days. One man died on reaching the deck of the "Judah Cappe;" the others recovered under the kind treatment they received from Captain Cappe, who landed them at Martinique, and refused any compensation for subsistence.	Feb. 31, 1865 -	A sextant, value 20 <i>l.</i>	Public vote.

Names of Persons.	Nature of Services rendered.	Date of Services rendered.	Description of Reward granted.	Out of what Fund granted.
Captain Don F. Gonzalez of the Spanish steamer "Cataluña."	The British barque "Julia" of Nassau struck on a sunken rock near Silver Keys, on the coast of Santo Domingo, and the crew and passengers had just time to escape in the boats before the vessel sank. After two days and nights of considerable suffering, they were picked up by Captain Gonzalez, who landed them at Santo Domingo, and refused any compensation, although he had subsisted them for thirteen days.	Feb. 2, 1865	A gold chronometer, value 52 <i>l.</i> 10 <i>s.</i>	Public vote.
Master of the Belgian fishing smack "Jeune Valentine."	Receiving on board their smack the crew of the fishing smack "Happy Return" of Ramsgate, which had foundered at sea, and landing them at Ostend.	Feb. 24, 1865	10 <i>l.</i> - -	Public vote.
Captain Don José Guardiola of the Spanish brig "Magin" of Barcelona.	Picking up from their boats, with some difficulty and danger, when off Vera, the crew (11 in number) of the brig "Arab" of Liverpool. Captain Guardiola treated the shipwrecked crew with the greatest kindness and generosity, keeping them on board his vessel after reaching Barcelona, until a steamer sailed for Marseilles, and refusing to receive any compensation.	Feb. 25, 1865	A sextant, value 20 <i>l.</i>	Public vote.
Captain Boy Bohn, of the Hamburg ship "Gellert."	Whilst on a voyage from Yarmouth, N.S., to Antigua the "Harriet" was disabled, and was fallen in with by the "Gellert." Captain Bohn took off the crew (5 in number), subsisted them and treated them very kindly for 18 days, until he reached New York, and refused any compensation.	Feb. 25, 1865	A sextant, value 20 <i>l.</i>	Public vote.
Mr. Eben Emerson, light-house keeper, Wood Island.	The brig "Edyth Ann" of Digby, N.S., stranded a few miles outside of Portland Harbour. The master went on shore to look for assistance, and during his absence the weather became more tempestuous and the crew took to their boat, which was upset, and they lost their oars. In this situation they were seen by the keeper of the light-house on Wood Island, who having failed in an attempt to reach them by himself, obtained the assistance of another man and towed them to a place of safety. The crew (8 in number) stated that they owed their lives to the lighthouse keeper's exertions.	Mar. 16, 1865 -	A binocular glass, value 6 <i>l.</i> 6 <i>s.</i>	Public vote.
Captain E. Louis, of the French schooner "Jeanne" of Dunkirk.	Receiving on board his vessel the crew of the barque "Balfour," of North Shields, which had been abandoned in a leaky state.	Mar. 20, 1865 -	A telescope, value 5 <i>l.</i> 15 <i>s.</i> 6 <i>d.</i> And 9 <i>l.</i> 5 <i>s.</i> for subsistence.	Public vote.
Captain C. H. Lyons, of the United States brigantine "Daniel Trowbridge."	Rescuing in lat. 26° N., long. 55° 10' W., the crew of the water-logged schooner "Emma" of Clare, N.S. Mr. Rogers, the chief mate, and four seamen belonging to the "Daniel Trowbridge," manned their boat, and at much risk brought the wrecked crew on board, where they were kindly treated by Captain Lyons, who kept them on board his vessel after arriving at Demerara, till opportunities occurred of shipping them in homeward bound vessels. Captain Lyons refused any compensation for subsistence.	Mar. 25, 1865 -	A binocular glass, value 6 <i>l.</i> 6 <i>s.</i>	
Mr. W. H. Rogers, chief mate.		- - -	A quadrant, value 5 <i>l.</i> 5 <i>s.</i>	Public vote.
Four seamen - - -		- - -	1 <i>l.</i> each.	
Captain J. Christensen, master of the Norwegian vessel "Marie."	Rescuing by means of his boat, and receiving on board his vessel, the master and crew of the schooner "Zoe" of Hull, which was abandoned when in a sinking state off Scilly.	April 30, 1865 -	A telescope, value 5 <i>l.</i> 15 <i>s.</i> 6 <i>d.</i>	Public vote.

Names of Persons.	Nature of Services rendered.	Date of Services rendered.	Description of Reward granted.	Out of what Fund granted.
Messrs. Henry I. Tapping, John Dougherty, and Charles W. Hathorn, pilots, belonging to the American pilot schooner "Mary A. Williams," No. 19.	Soon after leaving New York, the steamship "Olympus" of London sprung a leak, and her crew were preparing to leave her in their boats, when the pilots, seeing their signal of distress, proceeded to their assistance, and took them from their vessel. The "Olympus" foundered soon afterwards.	May 24, 1865 -	A telescope, value 5 <i>l.</i> 15 <i>s.</i> 6 <i>d.</i>	Public vote.
Captain F. S. Wallace, master of the United States barque "Rosamond."	Receiving on board his vessel the master, passengers, and crew (in all 315 persons) of the steam ship "Glasgow" of Liverpool, which was destroyed by fire in lat. 48° 30' N., long 68° 33' W. To provide accommodation for this large number of persons, Captain Wallace was obliged to throw overboard a portion of his cargo (coal).	July 31, 1865 -	A sextant, value 20 <i>l.</i>	Public vote.
Captain H. J. Jorgesen, of the Danish schooner "Karem Marie."	Picking up from their boat the crew (9 in number) of the brig "Comet," of Whitby, which had foundered 12 hours previously. Captain Jorgesen had the shipwrecked crew on board his vessel for five days, and treated them with great kindness. He landed them at Copenhagen, and refused compensation.	Sept. 11, 1865 -	A telescope, value 5 <i>l.</i> 15 <i>s.</i> 6 <i>d.</i>	Public vote.
Captain Roussel, of the French lugger, "Désiré Gustave."	Bearing down to the assistance of the sinking barque "Eliza Olive" of Bristol, in answer to a signal of distress, and rescuing the crew and master's wife (15 in all). Eleven persons were taken off in the lugger's boat, at considerable risk to those who performed the service; and after reaching their vessel with the part of the rescued crew, the boat was lost before she could be secured. The remaining four persons got on board the "Désiré Gustave" in one of their own boats.	Sept. 21, 1865 -	A gold watch, value 21 <i>l.</i>	Public vote.
M. Victor A. Prestaux, mate.		- - -	A telescope, value 5 <i>l.</i> 5 <i>s.</i>	
Francois Benjamin Lame-trie.		- - -	30 Francs each.	
Pierre Vincent Emile Catelain.		- - -	And 48 <i>l.</i> 4 <i>s.</i> 3 <i>d.</i> for subsistence, loss of boat, &c.	
Jules Emile Paumier -		- - -		
Charles Jean Baptiste Con-turier.		- - -		
Francois Auguste Comtesse	The ship "Bedford" of Shields was lost on the rocks of Rönnskär on the 20th October, and the master and crew (18 persons) took to the long boat, in which they were drifting about for 10 hours, when they were fallen in with by the Finnish fishermen, who, at great risk, conveyed them to land.	Oct. 21, 1865 -	10 <i>l.</i>	Public vote.
Jacques Ambrose Prié -		- - -		
Karl Dahlström -		- - -		
Axel Dahlström -		- - -		
Alex' Söderling -		- - -		
Victor Söderling -	The "C. E. Resenberg" fell in with the brigantine "Brisk" of Halifax, N. S., dismasted and water-logged. Part of the "Brisk's" crew went on board the "C. E. Resenberg" in their boat, which was a small one, and Captain Crowell went in one of his own boats, and rescued the remainder. There was a heavy sea running. Captain Crowell took them to New York, and declined to receive compensation for subsistence.	Oct. 29, 1865 -	A telescope, value 5 <i>l.</i> 15 <i>s.</i> 6 <i>d.</i>	Public vote.
Finnish fishermen.		- - -		
Captain Elkanah Crowell, junior, of the U. S. bar-quantine "C. E. Resenberg" of Barnstable, Massachusetts.	Rescuing from their boat, while on his passage from Königsberg to Antwerp, the crew and one passenger (29 in number) of the steamship "Tartar" of Hull, which had been abandoned by all except the master, who refused to leave his vessel. On the following day, 19 of the shipwrecked crew were transferred to the Dutch schooner "Jan Hevdick Van Nassau," and the Norwegian barque "Kong Carl;" the remaining 10 persons having been subsisted on board the "Grietje Kalno" for 12 days, were transhipped to the fishing smack "Martha" of Hull. For this service, Captain Kniper refused to receive any pecuniary compensation.	Nov. 27, 1864 -	A binocular glass, value 6 <i>l.</i> 6 <i>s.</i>	Public vote.
Captain Kniper, of the Dutch galliot "Grietje Kalno."		- - -		

Table 31. List of PERSONS (Natives of Great Britain and its Dependencies) to whom Rewards have been granted by FOREIGN GOVERNMENTS during the Year 1865, for gallant Services in SAVING LIFE FROM SHIPWRECK, &c.

Names of Persons.	Nature of Services rendered.	Date of Services rendered.	Description of Reward granted.	By what Government presented.
Captain Richardson Swenhold, master of the ship "Venice" of Sunderland.	Rescuing six French seamen from a critical position off the Island of Sein, and landing them at St. Nazaire.	March 19, 1865 -	Telescope - -	French.
Captain William Mackie, of the ship "Dee" of Aberdeen.	Picking up at sea and conveying to Malta the crew of the French brig "L'Heureux" of Marseilles. Captain Mackie refused any compensation.	Not stated -	Binocular glass -	Do.
Captain James Anderson, master of the "British Alice."	Saving the crew of the French ship "Rubens" of Dunkirk.	Not stated	Binocular glass -	Do.
Captain George Robinson, master of the British ship "Luzon."	Picking up at sea a boy belonging to the French ship "Fleur des Bois."	Not stated -	Binocular glass -	Do.
Captain Fitt, of the British vessel "Italian."	Services rendered to the crew of the Italian brig "Zitto."	Not stated -	Silver medal -	Italian.
George Francis, sailmaker - J. Standfield, seamen - Of the Dutch barque "Almonde."	For their gallant and humane conduct, whilst serving on board the "Almonde," in rescuing the crew of the British steamer "Askalon."	Jan. 15, 1865 -	Bronze medal and diploma each.	Netherlands.
Captain Thomas Atkins, master of the vessel "Montezuma" of Falmouth.	Taking from off the ice while on a voyage to Quebec part of the crew of the Norwegian vessel "Nor," which had foundered.	April, 1864 -	Silver medal -	Norwegian.
Richard Hooper - Thomas Oates - Henry Bray - John Dinney - Charles Nicholls - Name unknown -	- - - - - -	- - - - - -	- - - - - -	
			10l.	
Captain Wylie, master of the Royal Mail steamship "North American."	Picking up from their boats whilst crossing the banks of Newfoundland the crew of the Norwegian vessel "Protector," which two days previously had struck an iceberg and foundered. Had they not been discovered by the "North American" they would in all probability have perished from cold and hunger.	May, 1864 -	Telescope - -	Do.
Captain Clement Pinel, of the schooner "Margaret" of Greenock.	Assisting to rescue the crew of the Norwegian ship "Republik."	Oct. 1864 -	Silver medal -	Do.
Captain Samuel Martin Barter, master of the schooner "Sir Thomas Mansell" of Guernsey.	For assisting to save the lives of the crew of the Norwegian brig "Washington," wrecked on the Island of Terceira.	Not stated -	Silver medal.	Swedish.
Captain John Williams, of the ship "Exodus" of Liverpool.	Services rendered to the crew of the American ship "John Rhynas" of Belfast, Maine, after she had been in collision with the Dutch barque "Julie Claire." The "Exodus" was detained six days.	Oct. 17, 1863 -	Gold watch -	United States.

Names of Persons.	Nature of Services rendered.	Date of Services rendered.	Description of Reward granted.	By what Government presented.
Captain Rice Paxton, master of the ship "Sultana" of London.	The United States ship "Alarm" of Boston stranded during the night on the Pryparois reef in the Bay of Bengal, and her crew, fearing she would slip off and sink, took refuge on another part of the reef. On seeing the wreck, Captain Paxton altered his course, and sent his boats to examine it, when the crew were discovered, and had it not been for the timely arrival of the "Sultana" they would soon have perished, as the "Alarm" sank, and a storm arose which raised a sea by which the reef was swept. Captain Paxton had the shipwrecked crew on board his vessel for 13 days, and treated them very kindly.	Nov. 16, 1863	Gold chronometer	United States.
Captain Roberts, master of the barque "Charles Lambert" of Liverpool.	Rescuing the crew of the American ship "Frank Pierce" of Portsmouth, New Hampshire, lost whilst on a voyage from New York to Callao.	June, 1864	Gold watch	Do.
Captain E. Nash, master of the British steamer "Leipsig" of London.	Rescuing from almost certain death the crew of the American ship "Ocean Pearl" of Boston, wrecked off Tarragona, Spain.	Oct. 1864	Gold watch	Do.
Captain Tomlinson, master of the ship "Gloucestershire" of Bristol.	Rescuing the master and crew of the American ship "Albatross" of Boston, which foundered at sea whilst proceeding from Cardiff to Malta.	Dec. 15, 1864	Gold watch	Do.
Captain Richard Burman, of the brigantine "Only Son."	Rescuing the crew of the American schooner "Minnehaha" of Chesapeake City, which vessel was abandoned at sea.	Jan. 22, 1865	Gold watch	Do.
Captain C. W. Chaffield, of the steamer "Alford" of London.	Receiving on board his vessel the crew of the American ship "Borneo" of Richmond, Maine, which vessel was abandoned at sea.	Feb. 1865	Gold watch	Do.
Captain John Cohn, of the barque "Silvercraig."	The American ship "Aone" of Providence, Rhode Island, when in lat. 10° 8', long. 88° E., was struck by a cyclone and sunk. The master and two seamen managed to get on a piece of the wreck. Six days afterwards, Captain Cohn having sighted an unknown object about 11 miles distant, altered his course, and after searching for several hours he discovered and rescued the survivors of the "Aone."	April, 1865	Gold watch	Do.
Captain John Higgins, master of the barque "Christian Rankin" of Greenock.	Rescuing near the Western Islands the crew of the United States barque "Union," which had been dismasted, and was leaking badly. On discovering the wreck Captain Higgins remained by it during one night, and next morning rescued the crew and conveyed them to Queenstown.	Not stated.	Gold watch	Do.

PART III.

PRECEDENTS OF SPECIAL INQUIRIES INTO CASUALTIES, ORDERED BY THE BOARD OF TRADE DURING THE YEAR 1865.

Name, &c. of Ship.	Case as first reported.	Steps taken by the Board of Trade.	Substance of Report after Investigation.	Final Result.
1. "Aleppo," S.S. of Liverpool. 1,458 Tons. Official No. 53,970. Geo. LANGLAND, Master. C. C. No. 4,453.	Collision off Bardsey Island on the 30th of August 1865.	Inquiry at Liverpool, before T. S. Raffles, Esq., Stipendiary Magistrate, assisted by Captains Harris and Baker, Nautical Assessors.	The "Aleppo," one of the Cunard line of steamships, was on her homeward voyage from Galatz, and about 2 o'clock on the morning of the 30th August she was off Bardsey Island, going at the rate of about nine knots an hour. The weather at the time was clear, but hazy on the horizon. A small vessel was seen by one of the look out men a point and a half on the starboard bow, and he reported it to the officer of the watch, Mr. Thomas Mitchell, the second officer of the ship, who held a Master's certificate of competency. As no lights were seen on board the vessel Mr. Mitchell supposed she was standing the same course as the steamer, and ordered the helm to be starboarded. On discovering, however, that the vessel was on the starboard tack and standing across the steamer's bows he ordered the helm to be put hard aport, but too late to avoid a collision, and the "Aleppo" struck the schooner amidships, and she immediately foundered with all on board. The Court found Mr. Mitchell in default for the loss of the schooner, inasmuch as he continued his course at full speed after she was reported to him, and neglected to take the proper and necessary steps to avoid collision till too late. Mr. Mitchell's statement, that he supposed the schooner was taking the same course as the steamer, could not be taken in justification of his conduct; for being uncertain that he was correct in his conclusion, he took no precautions to avoid an undoubted risk. The Court, therefore, held him responsible for the loss of life and property, and suspended his certificate. Had it been proved that the "Charles Edwards" exhibited lights a much more serious sentence would have been awarded.	Certificate of Competency of Thomas Mitchell, 2d Mate, suspended for nine months.
"Charles Edwards," of Chester. Official No. 21,037. WILLIAM HEWITT, Master.				
2. "Alexandra," S.S. of Newhaven. Official No. 45,653. ABRAHAM BLAMPED, Master. C.C.	Stranded on the Ailley Rocks, off Cape Ailley on the 7th September 1865.	Inquiry at Lewes, before Charles Carpenter and Burwood Godlee, Esquires, Justices of the Peace, assisted by Captains Baker and Thurburn, Nautical Assessors.	The "Alexandra" was a passenger steamer belonging to the London, Brighton, and South Coast Railway Company. At 2 30 A.M. on the 7th September she left Newhaven for Dieppe, with a crew of 21 hands, 27 passengers, and a valuable general cargo. The course steered was S.E. $\frac{1}{2}$ E., being well to the eastward, so as to allow for the ebb tide which was running at the time. During the passage across the helm was frequently ported and starboarded to avoid passing vessels. On leaving the weather was fine and clear, but at 6 30 A.M. it became thick, and at 6 45 A.M. a dense fog had set in. The speed was first reduced to half and afterwards to dead slow, and soundings were occasionally taken; the least water got, according to the evidence of the Master, being 6 $\frac{1}{2}$ fathoms, but the Second Mate, who was heaving the lead, states that he got one cast in 3 $\frac{1}{2}$ fathoms. At 8 40 A.M. the mate pulled in towards the land to ascertain the ship's position, and on his return reported that she was from 1 $\frac{1}{2}$ to 2 miles west of Cape Ailley. The engines were then turned ahead dead slow, and the vessel's head brought to the northward, but the force of the wind and her own way set her towards the Ailley rocks, and she struck lightly, but appeared to have sustained no damage. The engines were then stopped for about 15 minutes, during which time the vessel must have been drifting towards the rocks; and after the boats were got ready for lowering, the engines were again turned ahead, but a few minutes afterwards the vessel struck, and became a total wreck. The crew and passengers reached Dieppe safely in the boats. The Court were of opinion that the course steered ought to have taken the vessel farther to the eastward, but thought it probable that, through frequently altering the helm to avoid passing vessels, she might have been taken farther to the westward than was supposed. Credit was given to the Master for the precautions used previous to receiving the Mate's report as to the position of the ship, by which report he appears to have been misled; but the Court found his conduct inexcusable for neglecting to use the lead, with one exception, afterwards. They therefore found that the ship was lost by default of the Master, and suspended his certificate.	Captain Blampied's Certificate suspended for three months.

Name, &c. of Ship.	Case as first reported.	Steps taken by the Board of Trade.	Substance of Report after Investigation.	Final Result.
<p>3. "Anne Baldwin," of Liverpool, 310 Tons. Official No. 1,438. EDWARD HENRY NETHERCLIFT, Master. C. C. No. 15,778.</p>	<p>Stranded on the little Conch Reef, on the coast of Florida, on the 16th of April 1865.</p>	<p>Inquiry at Liverpool, before Charles James Preston, Esq., Stipendiary Magistrate, and Captains Harris and Baker, Nautical Assessors.</p>	<p>The "Anne Baldwin" having discharged a cargo of coal at Kingston, Jamaica, proceeded to Pedro Kay and loaded a cargo of guano. Two of the crew having deserted while at Pedro Kay, it was necessary to return to Port Royal to obtain hands in their stead. Some dissatisfaction arose amongst the crew while at Port Royal, as the vessel had been rather leaky on her passage from Pedro Kay. A survey having been held on her by some of the officers of one of Her Majesty's ships, she was pronounced seaworthy, and sailed for Liverpool on the 1st of April. On the 6th of April she was found to be making a little more water than usual, and after getting into the Gulf of Florida the leak increased to fourteen inches an hour. On the 16th the crew refused to proceed, and the Master hauled the ship towards the Florida bank to ascertain his position, and await orders before shaping a course for Key West. The vessel then tacked, and soundings were occasionally taken, till 3-15 A.M., when she was hove to. A look-out was also sent to the foreyard, and after telling the Acting Mate the soundings, and leaving directions to be called at daylight, the Master left the deck in his charge. At 4-15 A.M., the ship having no way on her, the Mate cast the lead, but failed to obtain correct soundings in consequence of the lead fouling at 15 fathoms. Five minutes afterwards the ship struck, and three days afterwards she had to be abandoned. During the course of the inquiry a question arose as to the sobriety of the Master during the earlier periods of the voyage, but the Court found that he was perfectly sober after leaving Port Royal up to the time that the vessel grounded. Taking into consideration the intricacies of the navigation, and the probability that the current had set the ship on the reef, which lay a very short distance from deep water, the Court did not think that the Master had been deficient in vigilance or attention to his duties, and returned him his certificate. By order of the Board of Trade, an inquiry was subsequently instituted by the Liverpool Local Marine Board into charges of gross misconduct and drunkenness on the part of the Master of the "Anne Baldwin" previous to leaving Port Royal for Liverpool, and the charges having been proved, his certificate was suspended for twelve months.</p>	<p>Captain Netherclift's Certificate returned to him.</p>
<p>4. "Armenian," S.S. of London. 763 Tons. Official No. 5270. THOMAS LEAMON, Master. C. C. No. 17,066</p>	<p>Stranded on the Arklow Bank on the 25th January 1865.</p>	<p>Inquiry at Liverpool, before T. S. Raffles, Esq., Stipendiary Magistrate, assisted by Captains Harris and Baker, Nautical Assessors.</p>	<p>The "Armenian" sailed from Liverpool about 9-30 A.M. on the 24th of January bound for Madeira, Teneriffe, and the west coast of Africa, with a crew of 48 hands, 43 passengers, Her Majesty's mails, and a general cargo. About noon she discharged her pilot at the Bell Buoy, and proceeded under all steam and sail. Owing to the thick state of the weather no land was seen after leaving the Bell Buoy. The course steered was N.W. by W. $\frac{1}{2}$ W till about 6-30 P.M., when it was altered to S.W. $\frac{1}{2}$ W., and soundings obtained at 5-7 and 9 P.M. gave from 33 to 44 fathoms. Shortly before midnight a revolving light was seen by the man on the look out, who states that he reported it to the Second Mate then on the watch, but according to the evidence of the latter, no such report reached him. A few minutes after midnight the Mate came on deck, and observing a light on the port bow, pointed it out to the Second Mate, but neither of them informed the Master, who came on the bridge about this time, and also saw the light, but took no measures to haul the ship off, till the cry of "breakers ahead" aroused him to a sense of his danger. The helm was then starboarded, but as the ship was going at the rate of ten knots an hour under full sail, her doom could not be averted, and she struck on the Arklow Bank about five miles to the northward of the light ship and became a total wreck. Four lives were lost belonging to the ship, and four of the crew of the light ship, were drowned by the upsetting of their boat in the breakers while proceeding to the assistance of the shipwrecked crew. The Court found the Master in default. The discovery of a light on the Irish coast was the discovery of danger, and although the light had been visible for half an hour, valuable time was wasted, and no steps taken to extricate the ship from her dangerous position. It is clear that she had been running in shoal water for some time before the accident, and had the necessary precaution of heaving the lead been continued, in all probability the fatal catastrophe would have been avoided. In delivering judgment, the Court commented in strong terms upon the loose manner in which the First and Second Mates discharged their duties during the night on which the ship was lost. They were of opinion that had the Second Mate been sufficiently on the alert during the last hour of his watch, he would have heard the report of the look-out man; and with reference to the conduct of the First Mate, they were of opinion that he failed in his duty, in that on discovering the light he went below to consult his chart, instead of informing the Master or taking measures himself to avoid the danger. Both Mates hold certificates of competency as Masters. The Court remarked on the necessity of heaving the lead during thick and foggy weather, which has been so often impressed upon commanders of vessels during the course of these inquiries.</p>	<p>Captain Leamon's Certificate suspended for 9 months.</p>

<p>5. "Barbadian," S.S. of Liverpool. 724 Tons, Official No. 13,759. JAMES GRAHAM, Master. C.C.</p>	<p>Stranded on the Blackwater Bank on the 6th December 1865.</p>	<p>Inquiry at Liverpool, before T. S. Radcliffe, Esq., Sipsidary Magistrate, assisted by Captains Harris and Hight, Nautical Assessors.</p>	<p>The "Barbadian" left Liverpool at noon on the 5th of December, bound for Barbadoes and other West Indian ports, and had a crew of 35 hands, four passengers, and a general cargo. At 9 p.m. the South Slack was abeam, the course steered being S.W. by V., which was continued till midnight at a speed of about 94 knots. At midnight the Quartermaster took the watch, and found the course steered W. by S., which was continued. At 4 a.m. the Second Mate came on deck, found the vessel on the same course, and saw a revolving light two points abaft the starboard beam, which the Chief Mate informed him was the Tuskar. A few minutes afterwards a bright fixed light was seen on the port bow, when the helm was starboarded and the light reported to the Master, who came on the bridge, and having looked at it for a few minutes, steadied the ship at W.S.W. and then went below, leaving directions to be called at 8 a.m., or in case the ship neared the land. About a quarter of an hour afterwards the ship struck, and as her engines became immediately disabled, the crew proceeded to get out the boats. In a few hours the ship parted in two. Twenty-five persons were saved, of whom four were taken from the mizen rigging on the afternoon of the 7th by the Rossclare lifeboat, after twenty-seven hours' exposure. The Master, First Mate, and four others, took refuge on the forecastle, from whence they were seen to be washed away about noon. The Court remarked that this was the fourth inquiry within the last few weeks into casualties to vessels which had struck on the Irish coast, and that in two of the cases, and in this, the disaster arose from bad navigation and a total neglect of the lead. If Masters of vessels will continue to persist in steering a westerly instead of a southerly course after rounding the South Slack, and before they are clear of the Tuskar, these casualties will constantly occur, and the more so if the lead is totally disregarded. In this case it appears almost incredible that the light of the Arklow lightship should have been taken for the Tuskar, and the light of the Blackwater for that of the Saltees, especially when it ought to have been known from the course and distance run that they could not have been near the Tuskar; nor would any allowance for tide have made such an error in their calculation in so short a time as to induce the Master to shape a course to the W.S.W. under the belief that he had passed the Tuskar and was rounding the Saltees. The Court regretted that they were compelled to say anything which might call in question the seamanship of men who had lost their lives in the catastrophe, and could not be heard in their own defence, but they felt it an imperative duty in the interest of public safety to point out as clearly as possible the errors which had led to the loss of so many vessels and had produced such a lamentable loss of life. In this case the evidence of the survivors was too conclusive for the Court to doubt that the "Barbadian" had been lost by the fatal error of bearing away to the westward too soon, and not heaving the lead.</p>	<p>Captain Graham perished in the wreck.</p>
<p>6. "Byzantium," of Shields. 304 Tons, JAMES ORNSTON, Master. C.S. No. 44,932.</p>	<p>Stranded on the Gunfleet Sands, 9th February 1865.</p>	<p>Inquiry at Tynemouth, before S. Mease, Esq., and J. F. Spence, Esq., Justices of the Peace for the Borough of Tynemouth, assisted by Captains Harris and Baker, Nautical Assessors.</p>	<p>The "Byzantium" sailed from Shields on the 28th January 1865, having on board a crew of eleven hands, and bound for Alexandria with a cargo of coals. Nothing of unusual moment occurred till the evening of the 9th February, when at 6 o'clock Orfordness light was seen, bearing west 8 or 10 miles distant, wind N.E., the ship steering S.S.W. At 8 p.m., on the Mate coming on deck, he found that by the Master's orders the course had been altered to S.W. At 8:30 p.m. a fixed light was seen about three points on the starboard bow, and also a revolving light a point and a half on the same bow, though only one light was visible from the deck. This light the Master mistook for the Galloper, although that vessel exhibits two lights. Under this impression, the ship was hauled more to the westward, and to N.W. by N., and although another light vessel came in sight, the same course was continued till shortly after 10 p.m., when the ship struck on the Gunfleet Sands, and next morning was abandoned as a wreck. The Court held that the accident was caused by inattention to the lights and neglect of the lead.</p>	<p>Captain Ormston's Certificate suspended for 6 months.</p>
<p>7. "Columbian," S.S. of Liverpool. 731 Tons, J. D. BENNETT, Master. C.C. No. 14,511.</p>	<p>Stranded on the Island of Ushant, coast of France, on 17th January 1865.</p>	<p>Inquiry at Liverpool, before T. S. Radcliffe, Esq., assisted by Captains Harris and Baker, Nautical Assessors.</p>	<p>The "Columbian" left Liverpool on the 10th January, with a crew of 32 hands, one passenger, and a general cargo, bound for St. Thomas. The Pilot left the ship on the morning of the 11th off Point Lynas, the weather at the time being fine. On the 12th a gale sprang up which carried away three of the boats, and the pumps had to be set to work. All day during the 13th the whole crew were employed baling the engine-room, but the water gaining on them, extinguished the fires about midnight. Early on Saturday, the 14th, the ship bore up for some port (unknown) and sail was attempted to be set, but was blown away, and the ship continued to scud before the wind under bare poles until Monday the 16th, when the foretopmast was set. Before daylight on the 17th a revolving light was seen, and at daybreak land was discovered, which the Captain subsequently ascertained by an observation to be Ushant. Shortly after noon the ship struck on the rocks between Mencon and Stiff Point, on the Island of Ushant. In about half an hour the "Columbian" drifted off, but shortly afterwards she sank in deep water. Only three lives were saved; the second steward and two firemen, from whom these particulars were obtained. From the evidence, the Court could form no opinion of the cause of the leak, nor account for the position of the ship off the French coast on the morning of the 17th, the Captain and all the officers being lost, and there being no record of the voyage.</p>	<p>Captain Bennett perished in the wreck.</p>

Name, &c. of Ship.	Case as first reported.	Steps taken by the Board of Trade.	Substance of Report after Investigation.	Final Result.
<p>8. "Derwent," S.S. of London. 432 Tons, BENJAMIN BUCK, Master. C.S. 96,949.</p> <p>JOHN W. FILVES, C.S. (as Master,) Mate.</p>	<p>Stranded on a sunken rock off the Island of South Uist on the 19th June 1865.</p>	<p>Inquiry at Greenwich, before James Traill, Esq., Stipendiary Magistrate, assisted by Captains Harris and Baker, Nautical Assessors.</p>	<p>"The "Derwent" was on her return voyage from the Baltic with a cargo of wheat, and on the 19th June about 5.30 a.m. was off Glas Island; the light on which bore S.W. by W. about three miles distant. The weather was then clear, but became so thick before the vessel got abreast of the light that it could not be seen, although she must have passed within half a mile of it. From this point the Master laid the course S.W., and at 8.40 went below, leaving the Mate in charge. Though the weather was very thick, the vessel was kept at full speed, and no look-out kept except by the Mate, who was on the bridge. After the Master went below, the Mate, thinking the course was too southerly, altered it $\frac{1}{2}$ point to the westward, and after proceeding on this course for about an hour, the vessel struck on a sunken rock off the Island of South Uist and became a total wreck. Before leaving for the Baltic the "Derwent" had undergone extensive repairs, which it is supposed had affected her permanent magnetism; and the magnets of the steering compass had been removed, and not replaced. The Court acquitted the Master of blame. As the Mate had altered the vessel's course without consulting the Master, and neglected to keep a proper look-out, they suspended his certificate.</p>	<p>Captain Buck acquitted of blame. Mr. John Filves's Certificate suspended for 3 months.</p>
<p>9. "Duncan Dunbar," of London. 1,374 Tons, Official No. 18,724. J. B. SWANSON, Master. C.C. No. 993.</p>	<p>Stranded on the Las Roccas Reef, off the Coast of Brazil, on the 7th of October 1865.</p>	<p>Inquiry at Greenwich, before James Traill, Esquire, Stipendiary Magistrate, assisted by Captains Baker and Hunter, Nautical Assessors.</p>	<p>The "Duncan Dunbar" left London on the 28th of August, bound for Sydney, with a crew of 59 hands, 58 passengers, and a general cargo. On the morning of the 6th of October she crossed the line in longitude $30^{\circ} 40'$ west. The Master was aware that he was far to the westward, but determined to stand on, and as he had no doubt of weathering Cape San Roque, intended making his easting there. At noon on the 7th, according to the log, the ship was in latitude $20^{\circ} 56'$ S., longitude $93^{\circ} 10'$ west, Las Roccas bearing S.W. $\frac{1}{2}$ W. distant 65 miles. The course steered was from S.W. $\frac{1}{4}$ S. to S.W. by S., and the Master expected to pass 10 miles to the westward of Las Roccas, without allowing for currents, but afterwards calculated that he would pass 26 miles to the westward, as he experienced a strong current from W.N.W. At 6 p.m. the ship's reckoning was worked up, and Las Roccas found to be 20 miles distant. At 7 p.m. the Master took charge of the deck, and sent the Second Mate and a seaman aloft to look out, and at 8 p.m. the Mate was ordered to relieve the Second Mate. Just before going down the Second Mate observed that the water on the port bow had a strange appearance, which he remarked to the Mate, and also reported to the Master on reaching the deck. At this time the Mate called out "breakers, land," and the helm was immediately put up, but the ship took the ground and remained fast. Next morning a small inlet or bank of sand was seen, and on this the passengers and crew were safely landed, with a few things saved from the wreck. On the 11th, the Master, with six seamen and a passenger, proceeded for Pernambuco in the life boat, and fell in with a vessel which took them there, where they found the Royal Mail Steam Packet Company's ship "Onaida," which proceeded to the reef and took the shipwrecked people to Southampton. From the evidence of Captain Selwyn, R.N., by whom the Las Roccas Shoal was surveyed in 1857, it appears that instead of the strong westerly currents, as described in charts and books of sailing directions, he met with a strong current running in a southerly direction, with a tendency towards the east, and he was of opinion that the "Duncan Dunbar," coming from the N.E., would meet the south-east current when 16 or 20 miles from the Island; up to which time the current would be purely westerly. This would account for the ship being so far to the eastward of her reckoning. The existence of a south-easterly current was confirmed by another competent witness, and by the observation of the officers of the ship while on the reef, and the Master while on his passage to Pernambuco. The Court remarked that the utmost vigilance is necessary by those using the Roccas route, and the necessity of using this precaution was impressed upon the Master. Strong testimony was brought forward as to the Master's ability and carefulness, and the Court, having considered the circumstances in which he was placed, concluded that the ship was not lost by his default.</p>	<p>Captain Swanson's Certificate returned to him.</p>
<p>10. "Eclipse," of Dartmouth. 404 Tons, JOSIAH HARRIS, Master. C.C. No. 6,489.</p>	<p>Stranded near to Hartland Quay, on the 5th of April 1865.</p>	<p>Inquiry at Greenwich, before James Traill, Esquire, Stipendiary Magistrate, assisted by Captains Harris and Baker, Nautical Assessors.</p>	<p>The "Eclipse" left London on the 30th of March, in ballast, for Swansea. She had a crew of 12 persons, and the wife of the Master and the wife of the Mate were also on board. On the morning of the 5th of April, at 4 a.m., St. Ives light bore S.W. by W., and that on Trevoze Head E.; the wind being S.S.W., and the weather hazy. At 8 a.m. the Chief Mate took the watch from the Second Mate, the course being E.N.E. At 9.30 a.m. the weather became very thick, and the land was lost sight of. At 10.30 a.m. the course was altered to N.E. by E., which was kept for an hour, and was then altered to N.E. $\frac{1}{4}$ E., by order of the Captain. About 11 a.m. sail was shortened, and the ship laid to the E. for about seven minutes, and then altered again to E.S.E. Three minutes after the ship went ashore, a quarter of a mile S. of Hartland Quay. There was a discrepancy between the evidence of the Master and that of the Second Mate, but it was evident that the real cause of the loss of the vessel was the gross neglect of the lead.</p>	<p>Captain Harris's Certificate suspended for 6 months.</p>

<p>11. "Falcon," S.S. of Glasgow. 264 Tons, RICHARD HUNSON, Master. C.S.</p> <p>"Garland," S.S. of Glasgow. 192 Tons, ROBERT FLYNNICK, Master. C.C. No. 100,060.</p>	<p>Collision in Lough Foyle, 16th September 1865.</p>	<p>Inquiry at Londonderry, before George Fitzmaurice, Esq., Resident Magistrate, assisted by Captains Baker and Cochrane, Nautical Assessors.</p>	<p>The "Falcon" left Glasgow on the 15th of September, bound for Londonderry, with a crew of 23 hands, about 260 passengers, and a general cargo. On the afternoon of the 16th she entered Lough Foyle, and the Chief Mate, who was a licensed Pilot for the Port of Londonderry, took charge. At 8.15 p.m., the weather at the time being fine and clear, a steamer was seen coming down Channel, and about the same time the "Falcon's" helm was starboarded to pass to the southward of a schooner. At this time the Master was below at dinner, and did not come on deck till after the collision. While passing the schooner the "Falcon" was going at full speed, and she does not appear to have returned to her proper position on the north side of the channel, but continued at full speed and on the south side of the channel. The "Garland" left Londonderry at 2.15 p.m. on the 16th, the Master being a licensed Pilot for that port. Having slowed engines and blown off steam, while passing a brig standing to the northward, she continued to use these precautions nearly up to the time of the collision, when the engines were reversed full speed astern. The collision, however, took place, and the "Falcon" struck the "Garland" on the stem with her port bow, and was cut down to the water's edge. On the collision taking place, the deck passengers of the "Falcon" rushed aft and jumped into the after-quarter boat, when one of the davits breaking, several of them were thrown into the water, and others pushed overboard. Seventeen persons in all lost their lives. The vessel was then run ashore, but was got off on the following day, and steamed to Londonderry. The "Garland" sustained but little damage. The Court were of opinion that the Master of the "Garland" used proper precautions to avoid the casualty. The Master of the "Falcon" having left the deck while in a narrow channel, with vessels constantly passing in opposite directions, the Court considered his conduct highly reprehensible. The Mate having been in charge of the deck, and there being no reason why he should not have kept on the north side of the channel, the Court considered him in default.</p>	<p>Certificate of Captain Hudson, suspended for 3 months.</p> <p>Certificate of Hugh O'Donnell, Mate, suspended for 2 years.</p>
<p>12. "Glasgow," S.S. of Liverpool. Official No. 13,746. 1,153 Tons. HENRY MANNING, Master. C.C. No. 5,425.</p>	<p>Burned at sea on the 31st of July 1865, two days after leaving New York.</p>	<p>Inquiry at Liverpool, before T. S. Raffles, Esq., Stipendiary Magistrate, assisted by Captains Harris and Baker, Nautical Assessors.</p>	<p>The "Glasgow" left New York on her return voyage to Liverpool on the 30th July 1865, with a crew of 69 hands, 225 passengers, and a general cargo, consisting of cotton, &c. The holds being full, a portion of the cotton was carried in the fore stowage and berths, extending from the fore-castle bulkhead to three feet abaft the main hatchway. In stowing the cotton sufficient care had not been taken by the stowdore to keep the bales clear of the sounding well of the fore compartment, which was on the starboard side, and only accessible from the main deck; and instead of leaving the vacancy on that side of the vessel, the stowdore had left it on the port side, and the officers of the ship had omitted to discover the mistake. Soon after leaving New York, the carpenter reported the obstruction to the Mate, who promised him to have it removed. The following day the carpenter found more water than usual in the main well, and being anxious to sound the fore compartment he again reported the obstruction to the Mate, and, having obtained the services of the Boatwain's Mate, he went below to point out what he wanted done, and they took with them a bull's eye lantern, fastened by a sliding pin. A passage had been left over the cotton to admit of one man crawling in at a time, along which the Carpenter proceeded, and having reached the vacant space near the well, he accidentally upset the lantern while taking it from the Boatwain's Mate, which in falling burst open, and the lamp fell out amongst the cotton and immediately ignited it. Both men attempted to put out the fire with their hands, and in the attempt the Carpenter was considerably burnt. The alarm was then given, and every effort was made to extinguish the fire, but after several hours exertion, it was found necessary to abandon the ship. The American barque "Rosemond" hove in sight at the time, and the crew and passengers were received on board by Captain Wallace, who threw overboard part of his cargo to enable him to accommodate them. They were afterwards transferred to the "Erin" steamer, which landed them at New York. The Court found that the ship was set on fire by accident, but attributed the accident to the objectionable manner in which the cargo was stowed in the stowage. Had the sounding pipe not been wrongly covered by the bale, it would still have been necessary to take down a light for the purpose of sounding, and in addition, looking to the inflammable nature of the cargo, it was not sufficiently protected by the temporary bulkhead which separated it from the steerage passengers. In commenting upon the case the Court trusted that the unfortunate occurrence would be the means of preventing similar proceedings on the part of those engaged in the stowage of passenger ships, and pointed to the loss of life which might have ensued had the weather been less favourable.</p>	<p>Captain Manning's Certificate returned to him.</p>
<p>13. "Guayacan," of Swansea. Official No. 44,957. N. F. CAMERON, Master. C.</p>	<p>Stranded near Pebra Point on the coast of Brazil on the 20th February 1864.</p>	<p>Inquiry at Swansea, before George Grant Francis and Nathaniel Pryce Cameron, Esqs., Justices of the Peace, assisted by Captains Harris and Hatchard, Nautical Assessors.</p>	<p>The "Guayacan" sailed from Carazale, a port of Chili, on the 21st December 1864, bound to Swansea, with a cargo of copper regulus. Cape Horn was rounded about the middle of January, and the south-east trade winds were entered about the end of the month. The wind was light, and a sufficient offing not having been made, it was found impossible to weather the land in the vicinity of Cape St. Augustine without tacking to the eastward. This precaution was neglected, and the vessel stranded and became a total wreck. The Court found that the ship was lost by the default of the Master in hugging the land too closely, and neglecting to use the lead.</p>	<p>Captain Carder's Certificate suspended for 6 months.</p>

Name, &c. of Ship.	Case as first reported.	Steps taken by the Board of Trade.	Substance of Report after Investigation.	Final Result.
14. "Hector," S.S. of Sunderland. Official No. 44,550. 1,295 Tons. A. F. PEARCE, Master. C.C. No. 13,148.	Stranded on the Culling Bank, off Wicklow Head, on the 9th November 1865.	Inquiry at Liverpool, before T. S. Raffles, Esq., Stipendiary Magistrate, assisted by Captains Harris and Hight, Nautical Assessors.	The "Hector" left Liverpool on the 8th November, bound for Alexandria, with a cargo of coals. At 8:30 p.m. the Skerries were rounded, the South Stack light being on the port beam, about eight miles distant. A course S.W. & S. was then shaped down Channel, and at 1:30 a.m., the Mate having the watch, and not seeing the Bardsey light where he expected, the course was altered to S.W. by S. At 2:15 a.m. a bright light was seen on the starboard beam, which was reported to the Master, who, with the Mate, concluded that it belonged to a passing steamer. Soon afterwards, a red light was seen on the port bow, when the course was altered to S.W. by S. & S. and a man was sent aloft to look out, but almost immediately afterwards the vessel struck. The Court were of opinion that if the courses stated had been steered, the compasses must have been defective, as he had heard that the compasses were inaccurate, but on the assurance of the former Master he proceeded to throw overboard part of the cargo, she was got off on the 13th, and taken to Liverpool much damaged. The Master had only joined the ship a few days, and before leaving Liverpool he wished to have her reswung, sea under the impression that they were correct, which the run to the Skerries would appear to corroborate. When the light which was supposed to belong to a passing steamer was seen a cast of the lead would probably have saved the vessel, but the Court did not feel disposed to find the Master in default for that omission. Either the compasses were inaccurate or the evidence of the witnesses as to the courses steered was false; and the Court being reluctant to come to the latter conclusion, and finding the evidence as to the state of the compasses conflicting, gave the Master the benefit of the doubt, and returned him his certificate.	Captain Pearce's Certificate returned to him.
15. "John McIntyre," S.S. of London. Official No. 47,427. 797 Tons. COLSON DOUGLAS, Master. C.S.	Stranded on Hot Point, near the Lizard, on the 17th April 1865.	Inquiry at Falmouth, before John K. Kinsman and M. L. Bull, Esqs., Justices of the Peace, assisted by Captains Harris and Baker, Nautical Assessors.	The "John McIntyre" was employed in the coasting trade as a collier, and left London for Cardiff, in ballast, on the 15th of April 1865. On the 17th at 4:30 a.m. she was off the Lizard at a computed distance of 10 miles. At 7 a.m. a dense fog came on. Neither of the compasses, of which there were only two, was to be relied on; one, which was placed on the bridge, was known to be in error, and the other, which was placed on the mainmast, having been only recently put on board, no reliance was placed upon it. After slowing and stopping the engines occasionally, the Master was informed by a schooner which was spoken that the Lizard bore N.W. 5 miles. Allowance was then made for the error of the compass, and the vessel proceeded on her Channel course W. & N. when breakers were suddenly seen on the starboard bow, and the ship took the ground at 9:4 a.m. She was subsequently got off, much damaged, and taken to Falmouth. The Court were of opinion that the Master might have acted more prudently by putting the vessel's head off shore, but gave him credit for the precautionary measures he had taken previous to the casualty; and as he had probably been misled by the intimation he received from the passing schooner, they did not feel disposed to visit his conduct with severity. The omission to use the lead was not unnoticed by the Court, although the deep soundings around the Lizard would have been but little guide. The Court took into consideration the previous services and good character of the Master and returned him his certificate, with an admonition to be more careful in future.	Captain Douglas's Certificate returned with an admonition.
16. "Lady Hobart," of Liverpool. Official No. 1,784. 781 Tons. LOUIS SAMUEL EDWARD RICHMOND, Master. C.C. No. 14,161.	Stranded on the Irish Coast, off the island of Lambay, on the 29th January 1865.	Inquiry at Liverpool, before T. S. Raffles, Esq., assisted by Captains Harris and Baker, Nautical Assessors.	The "Lady Hobart" left Liverpool on the 28th January bound for Bermuda, with a cargo of coals, having on board a crew of 22 hands. At 8:30 a.m. next day the South Stack light house is stated to have borne south, at about 15 miles distance. At 9 a.m. opened the Irish Channel, wind S.S.W. and S. and increasing. Sail reduced to close-reefed topsails and courses reefed and furled. Under this canvas, on the port tack, the vessel headed W. and by S. to W. and by N., making as was estimated about five points leeway, and going about 2½ knots. Between 1 and 2 p.m. land was suddenly seen on the starboard bow, distant 2 to 3 miles, which proved to be the island of Lambay. After some delay, soundings in 10 fathoms were obtained, and an ineffectual attempt was made to set sail on the ship in order to stay her. Shortly after, land was seen on the port side, and the ship was found to be embayed. The anchor was after some time let go, a delay being caused in getting it clear; but the vessel was so near the shore that on the tide falling she grounded, and shortly after became a total wreck. The life boat was launched, and nine of the crew left the ship and succeeded in reaching the shore. Next morning the officers and remainder of the crew were rescued by the return of the lifeboat, manned by a crew from the shore. The Court found the Master in default in neglecting to wear the ship round when land was first seen, and also for not having the cable clear to let go the anchor in time.	Captain Richmond's Certificate suspended for six months.

17. "Zelia," S.S. of Liverpool. 431 Tons, THOMAS BUITON SKINNER, Master. C.C. No. 26,033.	Foundered off the port of Liverpool, on 14th January 1865.	Inquiry at Liverpool, before T. S. Raffles, Esq., Stipendiary Magistrate, assisted by Captains Harris and Baker, Nautical Assessors.	<p>The "Zelia" left Liverpool at 9:30 A.M. on the 14th January, having on board a crew of 49 hands, two Pilots, and six passengers, bound for Bermuda. There were also on board two gentlemen who were to have returned to Liverpool with the Pilot. When the "Zelia" left Liverpool the barometer was very low, the wind S.S.W., and increasing up to a gale during the day. The ship passed the Bell Buoy at noon, and shortly after she shipped several heavy seas. About one o'clock the engines were slowed to get on board the port anchor, which had been lifted on the rail clear of the water on leaving the river. It appears that after the anchors had been stowed the covers of the spaces on the hurricane deck for admitting the anchors were not put on, so that when the vessel went on at full speed the sea rushed in through these openings, and carried away the fore bulkhead of the deckhouse, and the manhole skuttle was washed off, filling the fore compartment with water, and settling the ship down by the head. The pumps were set to work, but without effect. The Captain determined to return to Liverpool, and with difficulty the ship was got round before the wind, and put on full speed. When abreast of the N.W. light ship she broached to and became unmanageable, shipping a large body of water, which burst open the fore latches. The Captain now ordered out the boats. The starboard waist boat was launched, but sank alongside with 16 persons in her. The port waist boat was next lowered, and got away with 12 persons. The port quarter boat also got away with 18 persons. The remainder of those on board, including the Captain and Officers, are supposed to have perished with the vessel. The port quarter boat was found to have no rowlocks, and had great difficulty in reaching the light ship, when alongside of which she unfortunately capsized, and the crew were lost. Eventually only 12 persons gained the light ship. As all the Officers were lost the Court had no judgment to pronounce.</p>	Captain Skinner perished in the vessel.
18. "Louisiana," S.S. of Liverpool, 1,643 Tons, Official No. 45,578. ABRAHAM ASPLET, Master. C.C. No. 12,909.	Stranded on the Old Head of Kinsale, on the 11th January 1865.	Inquiry at Liverpool, before T. S. Raffles, Esq., Stipendiary Ma- gistrate, assisted by Captains Harris and Baker, Nautical As- sessors.	<p>The "Louisiana" left Liverpool on the 9th of April 1865, and after calling at Queenstown to embark passengers; she sailed from thence on the 12th, bound to New York with a crew of 81 hands and about 500 passengers, principally emigrants. At 4:30 P.M. the Pilot left when just outside of Roches Point, the weather being tolerably clear for a short time after, but it gradually got thicker till about 6 P.M. when the fog became very dense. The engines were then eased to "dead slow," and the course which had been previously S.W. by S. was altered to west, directly towards the land. At 6:30 P.M. the helm was ported to avoid a fishing boat, and a man in the boat hailed the ship, but in the confusion the intimation given, whatever it might have been, was not heard. Having cleared the boat the helm was starboarded for the ship to regain her course, and a few minutes afterwards she stranded. Subsequently she was backed off and returned to Queenstown, where the passengers and cargo were transferred to another steamer, and the "Louisiana" returned to Liverpool to be repaired, having sustained material damage. In commenting upon this casualty, which took place within two hours after leaving port, the Court were much struck with the want of common prudence on the part of the Master in hauling the ship to the westward when the fog came on, as he had the whole Irish Channel open to him; nor had he any reason whatever for approaching the land, having left port so recently. In the courses steered after the Pilot left no allowance was made for the flood tide, although the Master was aware it was against him, and so the ship was forced rapidly towards the land, and although the fog was very dense, and the position of the ship uncertain, the important and necessary precaution of using the lead was entirely neglected. Under these circumstances the Court held the Master responsible for the loss of his ship, and taking into consideration the number of lives which had been jeopardized by his rashness, they suspended his certificate.</p>	Captain Asplet's Certificate suspended for six months.
19. "Margaret Kerr," S.S. of Greenock, 650 Tons, Official No. 28,974. JAMES MACDONALD, Master. C.C. No.	Stranded on the Croker reef off the coast of Florida, on the 21st of Feb. 1865.	Inquiry at Greenock, before Andrew Tasker and John Neill, Esqs., Justices of the Peace, assisted by Captains Harris and Baker, Nautical Assessors.	<p>The "Margaret Kerr" left Matanzas at noon on the 20th February 1865, bound for Greenock, with a cargo of sugar. On leaving, the wind was S.W. but it afterwards shifted to E.N.E. At the time of sailing the weather was equally and unsettled, and as the vessel proceeded a heavy head sea was encountered in which she strained much. On sounding the pumps, 14 inches of water were found in the hold, which increased rapidly, although the pumps were kept constantly going. On the morning of the 21st the vessel was making a point and a half leeway. The courses steered were from N. $\frac{1}{2}$ E. to N.N.E. till 8 A.M. on the 21st, when the course was set N. by E. $\frac{1}{2}$ E. and continued. The Master was intoxicated from the time the ship left Matanzas. At noon he made an observation, and said, the latitude was 23° 27' N. About 6 P.M. land was seen on the lee bow, about nine miles distant. At 7 P.M. the Mate suggested to the Master to put the ship about, but he replied that he "would clear the reef." About an hour later, while consulting the chart together, the Mate again told the Master that the ship ought to be put about, but he persisted in keeping on his course, and told the Mate to "mind his own business." At 8 P.M. the Mate went below, his watch having expired, and at nine o'clock the ship struck. Next morning the remains of a beacon were seen about 150 yards from the ship, Plantation Quay being about seven miles distant. As the ship could not be got off the reef she was finally abandoned on the 7th March. The Court found that the Master had been guilty of drunkenness, and that the ship had been lost by his aggravated default.</p>	Captain MacDonald's Certificate suspended for three years.

Name, &c. of Ship.	Case as first reported.	Steps taken by the Board of Trade.	Statement of Report after Investigation.	Final Result.
20. " <i>Maria Somes</i> ," Of London. 785 Tons. Official No. 12,969. GEORGE LAMBERTON, Master. C.S.	Stranded near Whitby Pier on the 10th of May 1865.	Inquiry at Tynemouth before George Jobling and Alexander Shannon Stephenson, Esqs., Justices of the Peace, assisted by Captains Harris and Baker, Nautical Assessors.	The " <i>Maria Somes</i> " left Sunderland at 3 p.m. on the 9th of May, laden with coal for Alexandria, and had a Pilot on board who was to take her to the Downs. On leaving the weather was thick and rainy, and while passing along the coast it continued so thick that neither the land nor the lights were visible. Notwithstanding this, the lead was not hove, and soon after midnight the vessel struck and became a wreck. The crew were saved by the Whitby life boat. The Court remarked that the fact of having a Pilot on board (even when the pilotage is compulsory) does not exempt the Master from the ordinary care and duty of his ship, the Pilot being there to assist him in the navigation where his knowledge is presumed to be defective, and not to relieve him of all responsibility as to the working and management of the ship. In this case the Master being unacquainted with the coast, had given up entire charge to the Pilot, and was below at the time of the casualty. Taking into consideration his long services, good character, and absence of previous disaster, the Court did not feel disposed to visit his conduct with severity, and returned him his certificate with a caution not to rely implicitly in future upon the experience of a Pilot. If the courses, as stated in evidence, had been correctly steered, the Court could not see how the casualty could have occurred, and looking also to the fact that the lead had been entirely neglected although the weather was thick, they found the Pilot responsible for the loss of the ship, but they had no power to deal with him for his neglect.	Captain Lambton's Certificate returned to him with a caution. The licence of the Pilot was suspended by the Trinity Board, Newcastle, for six months.
21. " <i>Ocean Queen</i> ," S.S. Of Newcastle. 147 Tons. Official No. 5,960. THOMAS PERMAN COCKS, Master. C.C.	Stranded on the rocks near Whitby, on the 19th of April 1865.	Inquiry at Tynemouth, before John Foster Spence and John Fawcett, Esqs., assisted by Captains Harris and Baker, Nautical Assessors.	The " <i>Ocean Queen</i> " left the Tyne at 8 p.m. on the 18th of April, bound for Antwerp with a general cargo. On leaving, the weather was favourable, with a fresh breeze from N.E. by E. The course steered was S.S.E., which, under ordinary circumstances would have taken the ship clear to Flamborough Head. At 11 o'clock, however, she was hauled nearer the land, by altering the course to S.E. $\frac{1}{2}$ E. The weather at this time was thick over the land, and although Sunderland and Hartlepool lights had previously been seen, a course was kept which could only result in danger, and which was quite unnecessary as the ship had so lately left port. The lead was altogether neglected. About 1 a.m. of the 19th, the glimmer of Whitby high light was seen, and an attempt made to haul the ship off, but she almost immediately struck and became a total wreck. The crew were saved by the Whitby life boat. The Court came to the conclusion that the ship had been lost by the default of the Master.	Captain Cocks's Certificate suspended for six months.
22. " <i>Ocean Ranger</i> ," Of Liverpool. 456 Tons, Official No. 47,604. GEORGE ROCHE, Master. C.C.	Stranded at Malahide Bay, on the coast of Ireland, on the 18th November 1865.	Inquiry at Liverpool, before T. S. Raffles, Esquire, Stipendiary Magistrate, assisted by Captains Harris and Hight, Nautical Assessors.	The " <i>Ocean Ranger</i> " left Liverpool on the 11th of November, bound for Savannah, with a crew of 16 hands, and a general cargo. She was cast off by the tug between the Ball Buoy and Ormes Head. The wind blew strong from the N.W., and the ship was worked to the westward till 3.30 a.m. on the 12th, when the wind having become fair she stood a W.N.W. course. At 10 p.m. a light was seen at a supposed distance of 14 miles, which the Master pronounced to be the Calf of Man Light. At 11.20 the course was altered to W., the Master saying that he wanted to make the Skerries. Soon after midnight a bright light was seen right ahead, and a flashing light on the starboard beam. The Master ordered the bright light, which he took to be the Skerries, but which was the Bailey Light on the Irish coast, to be kept on the port bow. At 4 a.m. the Mate took the watch, and half an hour later the bright light was shut in, and a red light opened. The Mate reported this to the Master, who did not come on deck at once, nor order a cast of the lead to be taken, although he said that he did not know what light it was. On the Mate returning on deck land was reported to him on the lee bow, of which he immediately informed the Master, and had hardly reached the deck again when the ship struck, and half an hour afterwards the crew had to abandon her. The Court came to the conclusion that the ship was lost through negligent navigation and neglect of the lead. When the Master sighted the Calf of Man light he ought to have known that a westerly course would lead him across to the coast of Ireland, and when the lights on the Irish coast were seen he took no warning, although he was evidently unacquainted with them, nor did he try to ascertain his position by means of the lead. The Court found that the ship was lost by default of the Master, and suspended his certificate.	Captain Roche's Certificate suspended for twelve months.
23. " <i>Orion</i> ," Of Liverpool. 328 Tons, Official No. 26,650. J. C. GRAYES, Master. C.C. No. 23,639.	Foundered off the Wolf Rock, on the 18th of May 1865.	Inquiry at Exmouth, before the Reverend J. T. Boles and John Wood, Esq., Justices of the Peace, assisted by Captains Harris and Fanholm, Nautical Assessors.	The " <i>Orion</i> " left Cardiff for Vera Cruz on the 26th April, with a cargo of railway iron and barrows. Having met with bad weather she sprung a leak and put back to Plymouth, where she underwent repairs, and again proceeded to sea on the 18th of May. When about 10 miles to the eastward of the Lizard she sprung a leak, and was hauled in towards the land for assistance. One of the pumps having been broken some of the crew were employed baling, but fearing their lives were in danger they left the vessel in the boats, the Master and Mate remaining on board. A schooner offered assistance and was requested by the Master to lie by, as his vessel was settling by the head. Subsequently assistance was offered by a pilot boat and a steamer, but both offers were refused by the Master, who stated that his vessel was past help, and she soon afterwards foundered. It appeared to the Court that the crew by deserting the vessel deprived the Master of the opportunity of pumping and baling. They were of opinion that the Master was wrong in not saving his logbook, and returned him his certificate with a caution as to his conduct in a future similar emergency.	Captain Grayes's Certificate returned with a caution.

24. "Premier," Barque, of London. 307 Tons. GEORGE HENRY COTHER, Master. C.C. No. 9,405.	Stranded in White Bay, Cork Harbour, 13th January 1865.	Inquiry at Liverpool, be- fore T. S. Raffles, Esq., Stipendiary Ma- gistrate, assisted by Captains Harris and Baker, Nautical As- sessors.	The "Premier" sailed from Iquique in Peru in July 1864, having on board a crew of 13 hands, with a cargo of nitrate of soda, and bound for Cork, for orders. She arrived at Cork on the 13th January, where the Master received instructions to proceed at once to Newcastle-on-Tyne. The "Premier" left Cork Harbour the same evening at 8 p.m., when, owing to the lightness of the wind, or the foulness of the vessel's bottom, the ship set into Whitebay, a little to the south of Fort Carlisle. The anchor was let go, but owing to a squall striking the ship at the same time she took the ground about 1.30 p.m. As the tide was falling nothing could be done except sending for a steam tug. At midnight flood tide made, but a violent gale set in at the same time from the N. to N.W.; she bilged, and the cargo was washed out, the wind being so high that the steam tug could give no assistance. Next day the crew were taken off, the vessel being apparently a com- plete wreck. Some days after, the weather having moderated, the vessel was raised and taken to Passage. The Court held that no blame was to be attached to the Master.	Captain Cother's Certificate returned.
25. "Savoit Faire," of Liverpool. Official No. 47,600. GEORGE MEIKLE, Master. C.C. No. 9,356.	Stranded on the Black- water Bank, on the 7th November 1865.	Inquiry at Liverpool, be- fore T. S. Raffles, Esq., Stipendiary Ma- gistrate, assisted by Captains Harris and Hight, Nautical As- sessors.	The "Savoit Faire," left Liverpool on the morning of the 6th of November, bound for Calcutta, with a crew of 32 hands and a cargo of salt. She was towed out to the Ormes Head, the wind being moderate at N.E., and the weather fine. At 8 p.m. the South Stack light was sighted at a supposed distance of 19 miles. Up to this time the course steered was W.N.W., which was kept till 11 p.m., when the Kish light and the Irish coast became visible. A cast of the lead was taken in 15 fathoms, and the ship was hauled out to S.E., and stood on that course till 2 a.m., when she was gradually brought up to W. and by N. About daylight land was seen on the starboard bow, and the same westerly courses were pursued towards the land till about 9 a.m., when the ship struck on the Blackwater Bank. After throwing overboard part of the cargo she was got off, with the assistance of a steam tug, and towed to Liverpool, much damaged. The Court were much struck by the extraordinary courses steered by the Master, and could not conceive how any man at all acquainted with the navigation of the Irish Channel could have adopted them. Instead of steering the usual south-westerly course down Channel after passing the Skerries (of which and of the South Stack he took no bearings), he steered a W.N.W. course across till the Kish light became visible, and a reference to his chart, and the soundings obtained, showed him he was in a wrong position. He then hauled off, and steered various westerly courses towards the land, apparently doubtful of his position, till the ship struck. At this time he neglected to use the lead, a single cast of which might have saved him. The Court were not surprised to hear that a report prevailed of insobriety on the part of the Master, but nothing adduced in evidence served to substantiate this accusation. All his antecedents were favourable, and he produced the highest testimonials, and credit was given to him for his conduct after the wreck. The fact, however, remained, that the courses steered under his direction led to the stranding of the ship, and the Court pronounced him in default, and suspended his Certificate.	Captain Meikle's Certificate suspended for 9 months.
26. "Temora," S.S. of Leith. 448 Tons, Official No. 22,940. ALEXANDER BROWN, Master. C. S. No. 120,450.	Lost on the Carr Rocks off the coast of Fif- shire, on the 22d Fe- bruary 1865.	Inquiry at Leith, before James Watt, Esq., and Charles Mackinlay, Esq., Justices of the Peace, assisted by Captains Harris and Agnew, Nautical As- sessors.	The "Temora" sailed from London on the 19th February, bound for Dundee with a cargo of jute. She encountered some bad weather, and put into Sole Bay, which place she again left on the morning of the 21st. At 1.50 p.m., on the 21st, St. Abb's Head, bore W. one mile distant, and from thence a course was steered N. $\frac{1}{2}$ W. for the Isle of May, which was sighted at 9.50 p.m. The same course was kept till 4.15 p.m., when the coast of Fifeness was seen broad on the port bow; the course was then altered $\frac{1}{2}$ a point N., but half an hour later the ship struck, and the following day was abandoned as a total wreck. The Court found that the Master was in fault for keeping so dangerous a course, and for neglecting to use the lead, and that the look out was bad.	Captain Brown's Certificate suspended for six months.
27. "Wearmouth," of Sunderland. 270 Tons, Official No. S. J. CHURNSIDE, Master. C. C. No. 2,667.	Stranded on Par Sands, Cornwall, 25th No- vember 1865.	Inquiry at Tywardreath, before Colonel Peard and Captain Norman, R.N., Justices of the Peace, assisted by Cap- tains Baker and Alston, Nautical Assessors.	The "Wearmouth" took in a cargo of linseed at Taganrog, and was bound to Falmouth for orders. She took the ground in the Bosphorus, but appeared to have sustained no damage, and when off the Spanish Coast bad weather was experienced, in which she lost some sails. On the 24th of November she made the English Coast near the Deadman Head to the Eastward of Falmouth, and on the morning of the 25th she was close to the Gribben, the weather being squally, with a strong breeze from S. to S.E. A signal was then made for a Pilot, and a cutter with a Fowey Pilot came alongside, but the wind at the time having hauled more to the Eastward, the Master did not take him on board, as he supposed that he would be able to weather the Deadman Head, and reach Falmouth. The wind having veered more to the S.S.W. he failed to do so, and again approached the Gribben, and rehoisted the signal for a Pilot. A barque was at the time standing in, and the Master of the "Derwent" thinking that those on board knew the coast stood in after her till the barque took the ground, and a few minutes afterwards the "Wearmouth" was run on shore, and became a total wreck. The Court were of opinion that it was quite impossible for the "Wearmouth" to weather the Gribben, owing to the fury of the gale, and that the Master was justified in beaching his vessel to save the lives of those on board.	Captain Churnside acquitted of blame.

PEICES of INQUIRIES abroad, instituted by CONSULAR and COLONIAL OFFICERS and others, into CASUALTIES to BRITISH SHIPS, reported to the Board of Trade during the Year 1865.

Name, &c. of Ship.	Date, place, and nature of casualty.	Court or Tribunal by whom Inquiry was made.	Substance of Report of Inquiry.	Final Result.
1. "Angela Burdett Coutts," of Liverpool. 599 Tons. Official No. 16,890. BROWNIE CANDLISH. C.S. 36,759, Master. RICHARD WILLIAMS. C.C. (as Master) 32,020. Chief Officer.	Stranded upon Point Divi off Masulipatam 23d April 1866.	Inquiry held at Masulipatam before G. Thornhill and J. W. Maiden, Esqs., Commissioners.	This vessel was on a voyage from London to Masulipatam. On the 22nd April by observation at noon the ship was found to be in Lat. 15° 31' N., Long. 81° 56' E. Her head was put towards the shore and land was sighted about sunset. At 4 a.m. of the 23rd, the Chief Officer on the watch, the ship was steering W. with the Light on Point Divi bearing W.N.W. or thereabouts. The course was twice altered by the Captain between 4 a.m. and the time that the vessel struck, first to W. by N., and then to W.N.W.; but although soundings had been obtained a little before 4 o'clock with the deep sea lead in 18 fathoms, and the ship had been steering straight on shore at a rate of about four or five knots, no order had been given by the Captain or First Officer to heave the lead again and the consequence was that the vessel ran on shore with the Lighthouse in sight, with a leading wind, and in perfectly fine weather. The Court were of opinion that the ship was lost by the neglect and default of the Captain and Chief Officer.	Captain Candlish's Certificate suspended for 6 months. Mr. Richard Williams's Certificate suspended for 6 months.
2. "Alliance," of Auckland, New Zealand 30th May 1865. Official No. CHARLES MARSHALL. Master.	Wrecked between Waikato and Manukan, New Zealand 30th May 1865.	Inquiry held at Port Waikato before Lieut. R. O. Stewart, R.N., and Mr. G. R. Breton, Pilot and Harbour Master, Nautical Assessors.	The "Alliance" left Taranaki on the 13th of May, and from the 15th to the 24th encountered a succession of heavy gales in which she became crippled and unmanageable from loss of sails, &c., and the crew exhausted by constant exposure. At noon on the 24th land was seen, and as the Master found that he could not reach Waikato nor take the Manukan Bar, and seeing that the vessel would not keep off shore till daylight, she was run on shore to save the lives of those on board. A survey was afterwards held on her and she was condemned. The Master held no certificate. The Court were of opinion that as the vessel had lost sails and sustained other damage, and had been labouring for eleven days off a lee shore with no hope of keeping the sea or making a harbour, that the Master was justified in running her on shore to save the lives of the crew, and they acquitted him of blame.	Captain Marshall acquitted of blame.
3. "Au Revoir," of Montrose, Official No. 27,621. CHARLES WATSON. Master.	Stranded on the North Spit of the Waikato River entrance, 29th July 1865.	Inquiry held at Port Waikato by R. O. Stewart, Esq., Resident Magistrate, and Chas. Williams, Esq., Commander, R.N.	The "Au Revoir" in going to sea from Waikato harbour overtook the schooner "Thane of Fife" (which was also going to sea) at a very narrow part of the channel near the bar, and in passing the said schooner, the "Au Revoir" got out of the strength of the current running out in mid-channel, and, owing to the lightness of the wind, became unmanageable. She then drifted on to the sands and was washed higher up the beach every tide, although efforts were made to get her afloat. The Court were of opinion that no blame could be attached to the Master.	Captain Watson's Certificate returned to him.
4. "Ballarat," Port not stated. 449 Tons. ROSE DAVISON, Master.	Stranded in Algoa Bay, 18th October 1864.	Inquiry held at Cape of Good Hope before John Campbell, Esq., R. M. and Commander H. G. Simpson, R. N.	The "Ballarat" left Sunderland on the 24th of June with a cargo of coals and arrived at Cape Town on the 8th October and remained at anchor until the 18th, discharging. Early in the morning of the 18th a heavy gale set in from the S.E. which caused the vessel to part from her anchors and drive ashore. The crew were rescued by the life boat. The Master was on shore at time of casualty. The Court were of opinion that the loss of the vessel was owing entirely to the insufficiency of her chains, which appear to have been, one, $\frac{1}{4}$, and the other $\frac{1}{8}$ of an inch, below the size required, and that she was not lost by the wrongful act or default of the officer in charge.	Captain Davison acquitted of blame.
5. "British Lion," of Shields. Tons 656. Official No. 17,050. G. H. ENGLISH, Master.	Foundered in Latitude 35° 23' S. and Longitude 0° 0', 23 Oct. 1864.	Inquiry held before Mauritius Marine Board.	The "British Lion" left London on 2d August with a general cargo bound to Madras. On 30th August she encountered a severe gale and sprang a leak, which caused her to make 6 inches of water per hour. On the 22nd of October the men became so exhausted with continual pumping that the vessel was abandoned with 7 feet of water in her hold, and the captain and crew took refuge on board the "Shannon," which vessel had been keeping company with her since the 3rd September. At 6 p.m. on the 23rd the "British Lion" went down with 13 feet 6 inches of water in her hold. The Court considered that Captain English was quite justified in abandoning his vessel.	Captain English acquitted of all blame.

6. " Choice ," (Port not stated.) A. R. PLEACE, Master.	Stranded at New Plymouth 16th May 1865.	Inquiry held at New Plymouth before Josiah Flight, Esq., Resident Magistrate, and J. H. Halford, Esq., Nautical Assessor.	The " Choice " arrived in the roadstead of New Plymouth on the 30th April and commenced discharging on the following day. Two days afterwards she went to sea on account of bad weather, and returned on the 5th of May, and continued discharging until the 13th May, by which time there were 150 palms left in her. She then took in 50 tons of ballast; she required 80 tons. On the 14th, the weather appearing threatening, the vessel would have gone to sea had she been in proper ballast trim. At this time she was riding with two anchors down. On the 16th the gale increased, and the vessel began to drag, and continued to do so until she got within the outhaul buoy when both chains were slipped and the head of the vessel turned so that she might be run on shore with as much safety as possible to the lives of the crew. She was stranded on the 16th and was abandoned on the 17th of May. The Court were of opinion that the wreck of the " Choice " was caused by accident, and that the Master was in no way to blame.	Captain Pleace acquitted of all blame.
7. " Childers " of London. 1,016 Tons. Official No. 48,577. A. ENWRIGHT, Master. C.C. No. 4,396.	Stranded at the entrance of the River Min, China, 30th May 1865.	Inquiry at Foochow before A. R. Hewlett, Esq., H.B.M. Acting Consul. Lieut. A. Eaton, R.N., A.W.G. Rusden, Merchant, Foochow, and Mr. John Thompson, Master of the Ship " Devana " of Aberdeen.	The " Childers " laden with tea, valued at 175,000 <i>l.</i> was proceeding to sea in tow of a steamer when she struck at the entrance of the river Min. A licensed Pilot was on board. The greater part of the cargo was lost and the vessel became a total wreck. The Court were of opinion that no blame attached to the Master whom they commended for his exertions after the stranding of his vessel.	Captain Enwright acquitted of blame.
8. " Chilo ," of Halifax. Tons, Official No. ALONZO NICKERSON, Master.	Stranded near the South-west point of Inagua 21st April 1865.	Inquiry held at Inagua before W. H. Pinder, Esq. Acting Resident Justice.	The " Chilo " left Cape Hayti on the morning of the 20th of April, bound to Boston, U.S., with a cargo of coffee and logwood. About noon the same day she was dismasted in a heavy head sea, but succeeded in reaching Inagua on the morning of the 21st, and while shaping a course for Mathew Town she drifted inside of the Molasses Reef near the South-west point of Inagua. A survey was held on the vessel and as she was found stout and strong the Master took the assistance of a Bahamas wrecking schooner, and she was towed to Mathew Town with hull and cargo uninjured. The Court was of opinion that the casualty, which rendered assistance from a wrecking schooner necessary, was the result of accident, and not of any wilful default or neglect of the Master or any other person.	Captain Nickerson acquitted of blame.
9. " Dennis Hill ," of Shields. 349 Tons. Official No. 12,355. DOUGLAS, Master.	Stranded near Cape Sunium, Attica, Greece.	Inquiry held by W. B. Neale, Esq., H.M. Consul Piræus, Lieut. C. E. Donville, W. Parsons, and H. N. E. Batchelor, Esqrs. of H.M. Ship " Meane " and Mr. John Rutherford, Master of the Brig " Lizzie Anne ."	When the " Dennis Hill " stranded the Master was below, having left directions with the Mate, who had the watch, to call him when the vessel neared the land; but this was not done till she was close upon it. The Court were of opinion that as the Master had no intention of going through the Mandri Channel he was wrong in not bearing up to the Southward of Marconisi, instead of tacking; and they were also of opinion that the Mate should have reported land earlier as directed by the Master. The Court remarked that neither the log nor lead were hove, nor were the anchors ready to let go.	Captain Douglas acquitted of wilful default.
10. " Dispatch ," of Melbourne. 254 Tons. Official No. 23,457. JOHN M'ARTHUR, Master.	Stranded in the River Woeung, August 17th 1865.	Inquiry held at Shanghai, before Lieut. F. J. Pitt, R.N., John Markham, Esq., H.D.M. Vice-Consul, T. L. Mourilyan, Esq., R.N., and Mr. J. Bernard, Master of the P. and O. Steamer " Ganges ."	This vessel left Shanghai for Foochow with a cargo of peas on the 17th August 1865. She had not a pilot on board, the Master, who had been trading to and from the port for 10 years, not being in the habit of taking one, and not thinking it necessary to have assistance. She proceeded down the river until 4 p.m. on the following day, when she took the ground while in stays and became a total wreck. The Court were of opinion that the vessel was lost through the Master neglecting to take a Pilot on board before leaving port, and also by his neglect in not keeping the lead constantly going whilst working through an intricate channel. The Master had not a Certificate.	Captain M'Arthur did not possess a Certificate.

Name, &c. of Ship.	Date, place, and nature of casualty.	Court or Tribunal by whom Inquiry was made.	Substance of Report after Inquiry.	Final Result.
11. "Donna Anna," of Liverpool. 286 Tons. Official No. 14,334. GEORGE NOWELL, Master. C.C. 7,516	Stranded on the Cornwallis reef, November 7th 1864.	Inquiry at Bangkok before T. G. Knox, Esq., H.B.M. Acting Consul, H. B. Crum, Esq., Merchant of Bangkok, Mr. James Foulender, Master of the British Vessel "King of Trumps," Mr. S. Fleming, Master of the British barque "Sea Nymph," and Mr. T. Winsborrow, Master of the "Ethelreda."	The "Donna Anna" left Saigon on the 24th October, bound for Hong Kong, with a crew of 12 hands, two passengers, and a cargo of rice. She reached Cape Radaman on the 3rd November and proceeded across the China Sea for the Palawan passage. On November 6th the Master supposed he was near the Pearson Reef and a good look-out was kept. At 5 p.m. rocks were reported ahead, and the vessel was found to be near an extensive reef. A S.E. course was then steered for an hour and the lead was kept going, but no bottom was found with 50 fathoms. At 6 p.m. the centre of the reef bore N. about 10 miles, and a course E. by S. was steered to pass between the Cornwallis and Cay Marino reefs, an allowance of half a point having been made for leeward current. After proceeding cautiously and getting everything in readiness to keep the vessel away at a moment's notice, a sudden change was observed by the look-out man in the colour of the water, and the helm was immediately put up, but the vessel struck and became a total wreck. The crew were saved by the Dutch barque "Sophia Louisa" and taken to Bangkok. The Court were of opinion that the loss of the vessel was caused by the current running in a direction contrary to that in which the currents in the China sea are supposed to run during the N.E. Monsoon and that no blame attached to the Master, who did all in his power for the safety of the vessel both before and after she stranded.	Captain Nowell acquitted of blame.
12. "Eastern Province," of S.S. Tons, Official No. 1, THOMAS WILSON, Master. C.C. No. 20,449.	Stranded 18 miles west of L'Agullas, 26th June 1865.	Inquiry held at Cape Town before C. Piers, Esq., J.P., and Mr. H. Wilson, Port Captain.	The "Eastern Province" left Algoa Bay at 5 a.m. on the 24th of June, and at 3 a.m. on the 26th L'Agullas Light bore N.E. by E., about eight miles distant. No land was seen, the weather being hazy, and at 5.15 a.m. the vessel struck and became a wreck. It appears there always had been a great difference between the vessel's compasses, for which the Master made allowance but for which he could not account. The Court were of opinion that up to the time of reaching L'Agullas the deflection in the compass was constant, and that the vessel was kept on her right course, but that after passing L'Agullas some change unaccounted for occurred in the performance of the needles of the compasses, which put the Master out of his reckoning. They therefore acquitted him of blame, and returned him his Certificate. The Governor of the Colony did not concur in the finding of the Court.	Captain Wilson's Certificate returned to him.
13. "Eclipse," (Port not stated.) LACHLAN HUNTER, Master.	Stranded at New Plymouth, 6th June 1865.	Inquiry held at New Plymouth before Joseph Flight, Esq., Resident Magistrate, and John Watson, Esq., Nautical Assessor.	The "Eclipse" arrived in the roadstead of New Plymouth from Dunedin on the 27th May. The Master, for safety, had been obliged to put to sea twice previous to the 5th June. On the morning of the 6th, the weather appearing very threatening, Captain Hunter deemed it necessary again to put to sea. In endeavouring to do so, however, the schooner missed stays and went on shore. There being no chance of getting her off, she was abandoned on the following day. The Court were of opinion that the cause of the wreck was accidental, and that the Master was in no way to blame for her loss.	Captain Hunter exonerated from all blame.
14. "Ella," of St. John's, N.B. 162 Tons. Official No. 48,211. JOHN MORRELL BROWN, Master.	Stranded on the Bank east of North Bimipis, Bahama Islands, 29d September 1865.	Inquiry held at Nassau, before E. B. A. Taylor, Esq., Police Magistrate.	The "Ella" left St. John's, N.B. on the 3rd of September, bound for Cuba, with a cargo of lumber. On the 23rd she experienced squally weather and lost some sails, and the following day at 9 p.m., the weather being thick and squally, she struck the ground heavily and remained fast. Two wrecking schooners having gone to her assistance, she was got off by being lightened of her deck load, and was taken to Nassau. The Court was of opinion that the stranding of the vessel was caused solely by stress of weather, and that the conduct of the wreckers was free from the slightest imputation of blame. The Master had not a Certificate.	Captain Brown did not possess a Certificate.
15. "Ellora," (Port not given.) JOHN COULTER, Master. GEORGE W. CHURCHILL, C.C. (as Master) Mate.	Foundered off Bombay Harbour, 20th May 1865.	Inquiry held at Bombay, before R. B. Burton, Esq., Police Magistrate, Captain W. C. Barker, Master Attendant, J. Dixon, Esq., Surveyor to Lloyd's Agents, F. Blackmore, Esq., Surveyor to Messrs. Remington & Co., and Captains Miller and Clare of the Ships "Agamemnon" and "Caranjah."	The "Ellora" left Bombay on the 20th of May laden with cotton, and from the evidence of the Master, Mate, Carpenter, and Pilot appears to have been in a perfectly seaworthy condition. The night before leaving Bombay she was pumped out, but on the night of the 20th she filled rapidly and sank. All the witnesses in their evidence stated that they could not in any way account for the vessel filling so rapidly. By the Master's orders the anchors were let go when the vessel was foundering. The Carpenter, whose duty it was to sound the pumps, neglected to do so the night the vessel sank, stating that she was making no water and that he was not called to do so. The Court could not arrive at any conclusion as to the vessel filling so rapidly. They were of opinion that the Master had committed an error of judgment in letting go the anchors when the vessel was foundering. The neglect of the Carpenter to sound the pumps was looked upon as a gross dereliction of duty by the Court, who commented upon the manner in which he had given his evidence, and his carelessness and negligence of his duties as Ship's Carpenter.	Certificates of Captain Coulter and Mr. Churchill returned to them.

16. "Empire," of Liverpool. 1,290 Tons. Official No. 50,261. Wm. Borlase, Master. C.C. 8,661.	Stranded off Cape Hatteras, 11th June 1865.	Inquiry held at New York, before E. M. Archibald, Esq., C.B., H.B.M.'s Consul, and Messrs. Mirehouse, Roskell, and Jones, Masters of the Steam Ships "Baltimore," "Edinburgh," and "City of Limerick."	The "Empire" was bound to New York with a cargo of sugar from Sagua. At 7 p.m. on the 11th of June, Cape Hatteras Light bore N.W. by N. about 15 miles distant, and at 9 p.m. the vessel struck. At 5 a.m. the following morning a passing steamer attempted to tow her off, but the "Empire's" tow-ropes broke, and after making another unsuccessful attempt the steamer proceeded on her course. The Mate states that he had only access to one chart, about 15 years old, and that he had no sailing directions. The Master appears to have been always in a state of intoxication. The Court were of opinion that, owing to intemperance, the Master was incapable of discharging his duty, and that he showed want of seamanship in sighting the land at so dangerous a part of the coast. The Court were also of opinion that the stranding of the vessel and the subsequent inability of the crew to haul her off, were in a measure attributable to the want of a proper chart and sailing directions, and to her incomplete equipment in regard to boats, kedges, and hawsers.	Captain Borlase's Certificate suspended for twelve months.
17. "Fleetwood," of Glasgow. 354 Tons. Official No. 7,504. John Ezell, Master. C.C. No. 9,669. Thos. Carrigill, Mate. C.C.	Stranded on Dassen Island, 20th June 1865.	Inquiry held at Cape Town before J. M. Hill, Esq., Resident Magistrate.	The "Fleetwood" sailed from Glasgow, bound to the Mauritius, with a general cargo. According to the evidence of the Master the latitude by observation on the 14th of June was 36° 16' south, and longitude by chronometers about 2° east. No observation was afterwards obtained, and the vessel's position the day before she struck was by the Master's dead reckoning 37° 28', but he forgot the longitude. A misunderstanding seems to have existed between the Master and his Mate, and the latter refused to let the Master see his log. A charge of drunkenness, however, brought against the Master by the Mate was quite unsubstantiated. At 3 o'clock on the morning of the 20th, the Mate having the watch, breakers were seen ahead, when the Master ran on deck saying it was only ice, and gave orders not at all suited to the emergency. About three quarters of an hour afterwards the vessel sunk, and the crew escaped in the boats. The Court was of opinion that the conduct of the Master in not giving proper attention to the duties of his ship was highly reprehensible, as he appeared to have had but little control over his crew, and to have left his vessel in the hands of his subordinates. The Court found the Mate to blame for not comparing his log with the Master, or allowing him to do so, and also for bringing against the Master a serious charge which he could not prove.	The Master's Certificate was suspended for twelve months, and the Mate's for three months.
18. "Forfarshire," of Tons. Official No. H. W. Munday, Acting Master. C.C. 18,443.	Stranded on the Whale Rock, Table Bay, 15th September 1864.	Inquiry held at Cape Town, by J. M. Hill, Esq., Resident Magistrate.	The "Forfarshire" was bound from Liverpool to Calcutta with a cargo of coal, and on the 4th September the Master died and the Mate took charge. The same day the crew demanded that the vessel should be taken into the nearest port, asserting that she was leaky. Being unable to reach Simon's Bay on account of the wind and current, it was resolved to make Table Bay, and while standing in with a moderate breeze, and all sail set, the vessel struck on the Whale Rock and became a wreck. The Mate, who had never been in Table Bay before, had ordered a good look out to be kept, and the lead attended to, and he states that seeing no breakers on the rock, he thought he was to windward of it, and clear of all danger. The unusual circumstance of there being no break on the Whale Rock was remarked by the Port Captain while on the deck of the "Forfarshire" the following day. The Court found Mr. Munday guilty of default, and suspended his Certificate.	Mr. H. W. Munday's Certificate suspended for six months.
19. "Fohkien," S.S. Hong Kong. 866 Tons. Official No. 41,260. W. O. Johnson, Master.	Stranded upon a small island near Shanghai, 13th July 1865.	Inquiry held at Shanghai, before Lieut. C. A. Watts, R.N., President, C. Treasurer Jones, Esq., acting for H.M.'s Vice-Consul, F. Piper, Esq., R.N., Capt. Edmund, of the Peninsular and Oriental Company's steam ship "Peking," and Captain F. Lewes, of the "Waterwitch."	The "Fohkien" left Shanghai for Hong Kong on the 13th July at 2.45 p.m. At 10 p.m. the easternmost island of Chinsan, W. about two miles; had experienced a very strong easterly current since leaving Gutziat, the weather fine, moonlight, and stars out; steered S. by E. and S.S.E. to pass between Video and Fisherman's Group. Soon after saw Video on port bow and Fisherman's Group on starboard bow. The fog now set in; at 11 p.m. quite thick, showing nothing but the top of Video ahead; steered so as to pass it on the port beam. At 11.27 it bore east; set the log and took the revolutions; at 11.30 p.m. the fog lifted, showing a small island ahead close on board. Stopped the engine at once, but the vessel struck upon the rock with tremendous force, and immediately commenced to sink. Passengers and crew got into the boats and landed at Ningpo.	Captain Johnson did not possess a Certificate.
20. "Fusilier," of London. 1,068 Tons. Official No. 48,578. D. B. Carvoso, Master.	Stranded on the Bluff Rocks, Natal, 25th May 1865.	Inquiry held at Natal, before the Acting Resident Magistrate, the Collector of Customs, the Port Captain, and others.	The "Fusilier" left Calcutta on the 15th March with coolies for Demerara, and on the 23rd May came to anchor in the outer roadstead of Port Natal, having borne up for that Port in consequence of the sickness of the coolies. At 6 p.m. on the 26th May the port chain parted. The starboard anchor was let go, but after six or eight fathoms of the chain had run out, the bight of the chain flew over the norman which jammed the chain. More sail was set, and endeavours made to clear the bluff. The ship then headed two points clear of the bluff, which was visible, but when abreast of the bluff the water shoaled and the anchor took the ground; this brought the ship's head to the wind, but she dragged in shore, and in a few minutes was on the rocks broadside, with her head to the north.	Captain Carvoso acquitted.

Name, &c. of Ship.	Date, place, and nature of casualty.	Court or Tribunal by whom Inquiry was made.	Substance of Report of Inquiry.	Final Result.
21. "John Cropper," of Liverpool. 1,052 Tons. Official No. 47,593. HENRY FAIRLEM, Master. C.C. 3,077.	Stranded upon the Morroan Rocks, East Coast, Malay, 17th July 1865.	Inquiry held at Singapore, before H. Brown, Esq., Marine Magistrate, and William Long, Esq., Master of H.M.S. "Coquette."	The "John Cropper" left Hong Kong on the 9th June in ballast, bound for Singapore and Calcutta. At about a quarter to three p.m. on the 17th of July she tacked and stood to eastward, Tingarah Point bearing N.N.W., 1½ miles distant. Sounded in three fathoms. At 6 p.m. tacked and stood S.W., the centre of Tingy Island bearing E.N.E., ½ mile distant, sounded 3½ fathoms. Light breeze and hazy weather. At 7 p.m. prepared to clew up and anchor for the night. The Master, thinking he heard the surf on the lee beam, immediately put the helm down and threw the ship in stays, she came up head to the wind and fell off. Thinking there was room to wear, the helm was put up, when her head fell off to W.N.W. and she struck upon the rocks. Tried to move her but could not. She then commenced to leak. The "Merriello" appearing in sight she was boarded, and an agreement made with the Master to lay by the "John Cropper," which he did until the 24th July, during which time everything that could be saved was put on board his vessel. The Court were of opinion the Master of the "John Cropper" was to blame for attempting to navigate his vessel, especially after dark, in such intricate waters, where light winds and a strong current prevail.	Captain Fairlem's Certificate suspended for three months.
22. "Keepsake," of N. Shields. Official No. 27,711. ELLIS SWAN, Master. C.C. 21,124.	Stranded upon a reef extending out from Pulo Savon, 29th June 1866.	Inquiry held at Singapore, before W. W. Williams, Esq., Magistrate of Police, and John Lawrence Kirby, Esq., Officiating Master Attendant.	The "Keepsake" left Shanghai on the 7th May with a cargo of silk and tea for London, and anchored at Koepong on the 27th June, where her watercasks were filled up. She left Koepong on the 29th of June at about 9 o'clock. From 10 a.m. until the time she struck (7-30 p.m.) the vessel was steered W.S.W., a course which would take her directly on to Pulo Savon. The Master, in explanation of steering as he did, stated that he had found a strong southerly current when pursuing the same route in October 1863. Had he taken the sun at noon he would have seen by his latitude that no such current existed. On the day the vessel was lost the Master appears almost wholly to have neglected his duties, and to have remained in the cabin. The Court were of opinion that the "Keepsake" was lost through the carelessness and culpable negligence of the Master.	Captain Swan's Certificate suspended for 12 months.
23. "Lalla Rookh," S.S. of London. P. F. Bird, Master. C.C. 19,923.	Stranded upon an island near Shanghai, 19th July 1865.	Inquiry held at Shanghai, before Lieutenant C. A. Watts, R.N., President, C. Treasure Jones, Esq., F. Piper, Esq., R.N., Captain Edmond of S.S. "Pekin," and Captain F. Lewes of "Waterwich."	The "Lalla Rookh" left Shanghai on the 18th July bound for Ningpo with a cargo of opium. No land was seen after leaving the Light Ship. Her course was then S.S.E., but this was altered gradually to S.S.W. At 1-35 a.m., on the 19th, land was seen right ahead, but before the engines could be stopped she struck heavily once and remained fixed. She was going "dead slow" at the time she struck. The lead was constantly going. She was in charge of a Pilot. At daylight every effort was made to get her off but without avail. The cargo and stores were transhipped into the steam ship "Waratha," and the "Lalla Rookh" was abandoned at 8 a.m. on the 20th, shortly after which she went down stern first. The Court were of opinion that the "Lalla Rookh" was lost through an error in judgment, sufficient allowance not having been made for the strong set of the ebb-tide.	Captain Bird acquitted of wilful default.
24. "Levant," of Aberystwith, 198 Tons. Official No. 8,480. JENKIN EVANS, Master. C.	Stranded on the reef off Southpoint, Barbados, 15th March 1865.	Inquiry at Christchurch, Island of Barbados, before Thomas Kerr, Francis Thornhill, and C. W. Fleming, Esq., Police Magistrate, assisted by J. E. Knight, Esq., R.N., Master of H.M. ship "Aurora," as Nautical Assessor.	The "Levant" left Liverpool on the 7th of February, bound for Barbados, and on the 15th of March, at 9 p.m., the Island was made, the course being altered to pass to the Southward of it. The Master was unprovided with sailing directions, or a proper chart, and at nightfall supposed he was 10 miles distant from the lighthouse, and proceeded under reduced sail, the weather being hazy, and the sea smooth. About 9 p.m. the vessel struck. Part of the cargo was discharged, and other means taken to get her off, but owing to some misunderstanding with those employed in discharging her, as to salvage, and also to an opinion expressed by some shipmasters that she could be got off without discharging more, the work of lightening her was discontinued, and she subsequently bilged and became a wreck. It appears that the vessel was too far to the Northward when the land was made, and that the Master mistook Kitbridges Point for Southpoint, and so brought his vessel too near the reefs on the Southern Coast. The Court were of opinion that the Master was culpably negligent in having sailed without the necessary sailing directions, and that he was also to blame for not acting with sufficient energy and promptitude in availing himself of the means for lightening his vessel. The requirements of the Act not having been complied with by the Court the Certificate of the Master was not suspended.	Captain Evans' Certificate was not suspended in consequence of the requirements of the Act not having been complied with.

25. "Lizzie," S.S. 152 Tons. Official No. 49,916. ROBERT LANG, Master.	Abandoned in about latitude 24° 55' N., longitude 79° 45' W., Gulf of Florida.	Inquiry held at Nassau, before E. B. A. Taylor, Esq., Police Magis- trate, and John Pinder, Esq., Assessor.	The "Lizzie" left Havana for London, via Bermuda, in ballast, on the 15th of June, at 8 A.M. At 6 P.M., when in the Gulf of Florida, she was discovered to be making water fast. The donkey and bilge pumps were set to work, and the water got under. At 1 A.M. on the 16th the water again made its appearance, and gained on them so rapidly that the fires were soon put out. A consultation was held, and it was decided to abandon the vessel, which was done. The cause of the leak is unknown. The Court attributed the loss of this steamer to no other cause but gross mismanagement and want of unity of action, and a common understanding between Captain Lang and his officers and engineers, as to the extent of the danger and as to the measures to be taken for freeing the vessel of water. The Governor of the Bahamas, in a letter to the Secretary of State for the Colonies, states:—"If the Magistrate had been aware of his power to recommend the cancellation or suspension of the Certificate of Captain Lang, he would have done so, in the event of his possessing such Certificate."	The Court was not aware of its power to recommend the suspension or cancellation of Certificate.
26. "Luzon," S.S. of Glasgow. 351 Tons. Official No. JOHN MCGOWAN, Master. C.S. No. 40,371.	Stranded on a reef, called Palang, Island of Lu- zon, on the 23rd of December 1864.	Inquiry held at Sin- gapore, before Lieu- tenant H. Burn, R.N., Master Attend- ant and Marine Ma- gistrate, and John W. Morris, Second Master in charge of H.M.S. "Banterer."	The "Luzon" left Amoy on the 20th of December 1864, bound to Manila, with a general cargo and 75 passen- gers. On the 22nd of December the latitude was 16° 43' at noon. Since leaving Amoy until that time the course steered was S. and S. E. At half past 4 Bolina was passed; distant about nine miles. At midnight the course was altered to S. by E. At half-past 1 on the morning of the 23rd, the Second Mate heard a noise on the port beam; orders were given for the helm to be put hard a port, and for the engines to be eased, but before the engine had time to go out of gear the vessel struck. Her head was then S.W. Backed the engines and threw the coals, &c. overboard, but she would not come off. Landed the crew and passengers in the life boat, and also some stores. The Court attributed the loss of the vessel to the fact that the reef was not marked very plainly upon the chart used on board the "Luzon." The Court were of opinion that the Master was very imprudent in hugging so closely, on a dark night, a shore of which he had not a chart on a large scale, and of which he had no previous experience; but, on account of his highly satisfactory testimonials, they only admonished him to be more careful for the future. The Second Mate was reprimanded for want of promptitude in having at once put the helm hard a port, without waiting to call the Captain.	Captain McGowan admonished. The 2d Mate reprimanded.
27. "Mary Emily," of Nassau. 126 Tons. Official No. 49,188. JAMES TURNER, Master.	Foundered about 60 miles from Elbow Cay, Abaco, Bahamas.	Inquiry held at Nassau, before E. B. A. Taylor, Esq., Police Magis- trate, and John Pinder, Esq., Assessor.	The "Mary Emily" left Nassau at 4 P.M. on the 21st of June, bound for New York, with a cargo of fustic, Indiarubber, &c. &c. At 6 o'clock on the 23rd three feet of water were found in her. All hands were called on deck and both pumps were worked, but in spite of the efforts used, the water gained upon them. At 8 A.M. her scuppers were in the water. Got the boats out, and left the vessel. A squall then arose, and after it was over nothing could be seen of the vessel. After an inspection of the log, and an examination of the witnesses, the Court was of opinion that the vessel foundered 60 miles from the Coast of the Bahamas; a distance which put the case beyond the jurisdiction of the Court of Inquiry.	The Court had no jurisdiction.
28. "Mary Nichol- son," of Sydney. 258 Tons. Official No. 52,517. JAMES MEREDITH, Master.	Waterlogged, and aban- doned in Bali Straits, August 1865.	Inquiry held at Batavia, before James McLach- lan, Esq., H.B.M. Con- sul, President, P. W. Auchincloss, Esq., Surveyor to Lloyd's at Batavia, and Cap- tain J. Simpson, of the "Three Bells," of Glasgow.	The "Mary Nicholson" became leaky, and the master, without consulting with the crew as to whether anything could be done to save the ship, gave orders for her to be abandoned; which was done. The Master states that the vessel was going down fast. The Court were of opinion that the Master abandoned the "Mary Nicholson" too hastily, and that he was guilty of very great neglect in having acted in the manner he did.	Captain Meredith severely reprimanded.
22. "Messenger," of Annapolis, Nova Scotia. 250 Tons. W. H. JONES, Master.	Stranded in Stone Fort Bay on the South coast of St. Kitt's, 18th May 1865.	Inquiry held at St. Kitt's before W. H. Davis, Esq., Police magistrate, R. C. Auld, Esq., Hon. T. B. Hardman, and Captain Moncur, Assessor.	Left Martinique in ballast on the 16th May with orders to call on Captain Hubbard at Old Road, which was described to the master as a town Eastward of Brimstone Hill. On the 18th, after getting within a few miles of Old Road, spoke the cutter "Margaretta," and was informed by the master, Captain Berkeley, that Captain Hubbard's place of business was at Basseterre. Immediately hauled by the wind and stood off about five miles, tacked again, and stood in about two miles of the land, tacked again, and stood off; the wind at the time was very light from the S.W. Shortly after it died away perfectly calm, and the vessel became unmanageable. She then began to drive towards shore at the rate of two miles per hour. With the assistance of Captain Berkeley let go two anchors, but she dragged these until she fetched up on the rocks. In two or three hours time the rudder got unshipped, her stern post started, and she became half full of water. After every exertion had been made, with the assistance of 16 men to get her off, all hopes of saving her were given up at about midnight. The Court were of opinion that it was an unavoidable accident such as might have occurred to the smartest seaman afloat.	Captain Jones acquitted of all blame

Name, &c. of Ship.	Date, place, and nature of casualty.	Court or Tribunal by whom Inquiry was made.	Substance of Report after Inquiry.	Final Result.
30. "Mischief" of Belfast. 298 Tons. JOHN WALSH, Master.	Stranded off the Lamon rocks. 5th May 1865.	Inquiry held at Svatow, before Her Majesty's Consul, Lieutenant H. C. St. John, R.N., and Mr. C. W. H. Hutchins, master of ship "Lauderdale."	The "Mischief" struck upon some outlying rocks attached to the Lamon group. From the evidence of the master and mate it would appear that the former did not make sufficient allowance for the current which set the vessel to the N.E. Under ordinary circumstances the allowance made by the master was quite enough, but at the time of the casualty the wind was blowing from the N.E., and according to the general rule the flood tide would run with less strength. The Court were of opinion that no blame could be attached to the master, but rather that he showed judgment and proper care, and that the loss of the vessel was purely accidental.	Captain Walsh acquitted of all blame.
31. "Montezuma," of Melbourne. Official No. 32,475, J. G. EVANS, Master.	Stranded on the beach a little to the North of Hokitika, 1st August 1865.	Inquiry held at Hokitika before G. S. Sale, Esq., resident magistrate, and John Robertson, son, Esq.	The "Montezuma" sailed from Melbourne on the 14th June laden with a mixed cargo for Hokitika. She arrived off Hokitika on the 18th July, but between that date and the 1st August there was no opportunity for her to cross the bar. At half past one a.m. on the 1st August, a gale commenced, with heavy squalls, from the West. All hands were called. About two o'clock a very heavy squall came on, during which one of the cables parted, and the ship fetched the other anchor home. Everything was done to make sail, but it was impossible to make head against the gale, and at about four a.m. the ship struck upon the beach. The Court were of opinion that no blame could be attached to the master.	Captain Evans acquitted of all blame.
32. "New Zealand," S.S. (Port not stated). LOUIS ANDERSON, Master.	Stranded upon the beach to the north of the Hokitika River, 7th August 1865.	Inquiry held at Hokitika, before G. S. Sale, Esq., Resident Magistrate, and John Robertson, late Master of the schooner "Favorite," Nautical Assessor.	The "New Zealand" left Dunedin on the 26th July, and arrived off Hokitika on the 7th August. She was then placed in the hands of Captain Legg, coasting Pilot, whilst she crossed the bar, which she did in safety. After crossing the bar she did not answer her helm soon enough to prevent her striking upon the beach on the north side of the channel. Tried to get her off but could not, as the feed pipes of the port engine were choked up with sand, and the engine was rendered useless. A hawser was then made fast to the "Favorite," but was carried away, and the anchor on the South Spit began to drag. After this the ship drifted down channel over the South Spit and out to sea, and was then carried ashore, where she became a total wreck. The Court were of opinion that the cause of the "New Zealand" being wrecked was the deficiency of steam power which caused her to yield to the current in the channel of the Hokitika River, and that no blame could be attached to the Master.	Captain Anderson acquitted of all blame.
33. "Onward," (Port not stated). — KREFT, Master.	Stranded in lat. 36° N., long. 140° 46' E., near a place called Tanitab, 29th Dec. 1864.	Inquiry held at Kanagawa, before H.B.M.'s acting Consul, Kanagawa, Lieut. E. Barkley, Commr. of H.M. gun boat "Havoc," and Captain G. W. Taylor, Master of the ship "Bacchante."	On Dec. 28, at noon, the ship was, by observation, in lat. 36° 55' N., long. 149° 46' E., and the current had set her E.N.E. 24 miles during the previous 24 hours. After that time no observation could be obtained, but land was seen at 8 a.m. on the 29th, bearing N.W. by W. distance about 40 miles, and taken to be Cape Kona. At noon on the 29th Dec., the lat. by dead reckoning was 36° 36' N., long. 149° 17' E. The Master then steered the ship S.W. by S. supposing that the current was still setting E.N.E., and that the vessel would be set off land, but it is clear the current must have changed to about N., and set the vessel in shore. She appears to have run about 46 miles after seeing the land before she struck. The land seen must, therefore, have been S. of Cape Kona. The chart on board was one of 1863, and appears to have been incorrect when compared with the Admiralty chart of 1863. The place where the "Onward" struck is shown to be 10 miles S. and 7 E. of the place as shown in the chart by which she was navigated. Under these circumstances the Court considered that no blame could be attached to the Master of the "Onward," and attributed her loss to one of the frequent changes of current so often experienced on the coast of Japan.	Captain Krefft acquitted of blame. The Board of Trade prepared and issued a notice to ship owners and ship masters, calling attention to the necessity for providing ships with good and correct charts.
34. "Rowena," Port of Basseterre, Island of St. Christopher. 58 Tons. Official No. 42,054. ROBERT COOK, Master.	Stranded on Blackwood Bush Cay Bank, near Andros Island, 27th May 1865.	Inquiry at Nassau, before E. B. Taylor, Esq., Police Magistrate, and J. Pinder, Esq., Assessor.	The "Rowena" left Nassau on the 25th of May, bound for Havana, with a cargo of fire-arms and liquors. On rounding Stirrups Cay she met with baffling winds, and at midnight on the 26th, the Master judging he was on the north-west side of the channel, after tacking ship, went below, giving instructions to the Mate to call him at 4 o'clock, and to tack when he supposed he was well on the eastern side. At 3 a.m. the vessel took the ground, but was got off, and as she was afterwards found to be leaking badly, was run on shore on Blackwood Bush Cay Bank, where she became a wreck. The greater part of the cargo was saved by a wrecking schooner. The Mate was no navigator, and had never before been an officer on board a vessel. The Court remarked that it was almost impossible to conceive greater indifference than was displayed by the Master under circumstances demanding the utmost vigilance and careful navigation. While tacking through a channel with light baffling winds, the points of tacking being mere conjecture, he went below for 4 hours, and relied on a most unskilful and thoughtless officer. Such conduct appeared to the Court to bear the character of wilfulness, and they were of opinion that his conduct was indefensible. The Master had no certificate.	Captain Cook did not possess a Certificate.

35. " <i>Rubens</i> ," of Aberdeen, 403 Tons. Official No. 26,671. ARTHUR ROBERTS, Master. C.C. No. 15,117.	Stranded in Table Bay, Cape of Good Hope, 9th May 1865.	Inquiry at Cape Town before J.M. Hill, Esq., Resident Magistrate.	<p>The barque "<i>Rubens</i>," from Liverpool to the Cape of Good Hope, with a general cargo, sighted Table Mountain at 7 A.M. on the 9th of May during a strong gale from S.E. About 7 P.M., Green Point Light was seen, and afterwards Robben Island and Mouille Light. Baffling winds and calms were experienced till about midnight, when the vessel stood across Table Bay with a fresh breeze. The night was clear with moonlight, a white haze hanging over the land. The lead was kept going, the leadman reporting 20 fathoms, afterwards 10, and then no bottom; but the Master states that fearing to trust any longer to the lead he was endeavouring to put her about when she struck. Notwithstanding the efforts of those on board, and assistance rendered by the life boat and other boats, the vessel remained fast and became a total wreck. The Master had never been in Table Bay before, and the Court was of opinion that having no local knowledge he was wrong in entering it at night. The Court was also of opinion that the lead was not properly hove, and that the Master ought to have been provided with the new Port Regulations. The Master's Certificate was suspended for six months, but on account of the good character the Board of Trade returned him his certificate at the expiration of four months.</p>	Captain Roberts's Certificate suspended for six months.
36. " <i>Sandringham</i> ," of London. 1,126 Tons. Official No. 48,599. JOHN RUPPON, Master. C.C. No. 1,565.	Stranded off Flat Island, Mauritius, 15th March 1865.	Inquiry by the Marine Board, Mauritius.	<p>The "<i>Sandringham</i>" arrived at the Bell Buoy, Mauritius, at 3:30 A.M. on the 12th of March, with 382 Coolies and a cargo of grain from Calcutta. Having been directed by the Harbour Master to proceed to Flat Island to land the Coolies she arrived there at 10:30 P.M., the weather being fine and clear. The master was unable to obtain a pilot and brought the vessel up as near as possible to anchorage ground shown on his chart, the depth of water being 7 fathoms. At 8:30 the following morning the Port Pilot hailed the vessel and said she was as well anchored as if he had done it himself, at the same time asking the depth of water and length of chain out. At noon the vessel commenced driving, when a second anchor was let go, the water having shoaled to 6 fathoms. During the afternoon the wind shifted and increased and the sea got up. About 7 P.M. the vessel struck and bilged, and at 10 P.M. she was full of water, and the sea rolling over the main deck, the crew and coolies having taken refuge on the poop and in the boats alongside. At 2:45 A.M. on the 14th one of the life boats left in charge of the Second Mate with a crew of four men, the Master's wife and child, the doctor and a sick seaman. The master afterwards left in another boat with eight of the ship's company and a Cooly, giving as a reason for leaving the ship that he wished to communicate with the people on shore as to landing the Coolies, and that in consequence of an injury to his knee he was incapable of exerting himself on board. A third boat left with the apprentices. The wind had increased to a moderate gale and the Mate with one of the remaining boats put some Coolies on board the Pilot boat which had run down ahead, a few more having been landed by the Second Mate. Spars, hencoops, &c., were then thrown overboard and the Coolies were persuaded to try and reach the shore on them. About 100 landed in this way, but 19 were drowned. About 2 P.M. the Government steamer came off, and landed the remainder. The Board were of opinion that the Master acted most imprudently in anchoring his vessel at night off an island with which he was totally unacquainted, and that having doubts as to whether his vessel was safely anchored, he was wrong in yielding his opinion to that of the Pilot. They also blamed him for sending away a boat which would have contained 20 persons with only four passengers, when he ought at once to have sent off all his boats with as many as they could carry, and to have remained on board himself, as the injury to his knee did not prevent him from walking. The Board recommended that the Master's Certificate should be suspended for twelve months, and submitted to the Governor that in their opinion the Pilot, whose error in judgment was the principal cause of the casualty, was deserving of punishment.</p>	Captain Rippoon's Certificate suspended by the Marine Board for twelve months, but returned to him at the expi- ration of nine months by direction of the Board of Trade. Mr. Green, Pilot, suspended by the Governor from all the emoluments of his office for three months.
37. " <i>San Miguel</i> ," of Liverpool. 535 Tons. Official No. 50,497. J. G. MOORE, Master. C.C. No. 10,972.	Stranded upon the Tipara Reef, Gulf Spencer, near Port Wallaroo, 8th May 1865.	Inquiry held at Port Adelaide, before B. Douglas, Esq., Sti- pendiary Magistrate.	<p>The "<i>San Miguel</i>" left Liverpool on the 9th December 1864 for Port Adelaide, where she arrived on the 15th March 1865, discharged her cargo, and proceeded thence towards Port Wallaroo on the 6th May with a general cargo. No Sailing Directions were on board, the Master being unaware that such had been printed. The Master was told at Port Adelaide that a light ship had been placed on Tipara Reef, but he did not ascertain the exact spot. Soundings were commenced off Port Pearce. The least water obtained was 10 fathoms, just before the vessel struck. The lead appears to have been over hove. The Court was of opinion that the vessel was stranded in consequence of the Master having neglected to provide himself before leaving Port Adelaide with sailing directions indicating the position of the lightship on Tipara Reef, and that sufficient care was not exercised in obtaining correct soundings when approaching the said lightship.</p>	Captain Moore's Certificate suspended for six months.

Name, &c. of Ship.	Date, place, and nature of casualty.	Court or Tribunal by whom Inquiry was made.	Substance of Report of Inquiry.	Final Result.
38. "Satsuma," of Aberdeen. Official No. 48,852. W. G. Glover, Master.	Stranded upon a rock to, the S.E. of Cape Nomo, June 3, 1865.	Inquiry held at Nagasaki, before Abel A. J. Gover, Esq., H. B. M.'s Acting Consul, Lieutenant Charles Blies, R. N., John Palmer, Esq., Master, R. N., and R. Bramwell, Esq., Master Mariner.	The "Satsuma" left Shanghai on the 28th May bound for Nagasaki. At daylight on the 3d June the land was made, and it was supposed to be Cape Nomo, the weather being very thick. Soon afterwards breakers were seen ahead and on each side. An attempt was made to tack ship but she missed stays, and in attempting to put her about she struck upon a rock. Twenty minutes later she began to fill. The passengers and their effects and as much of the cargo as possible were landed. Efforts were made to get the vessel off but without avail. The Court were of opinion that no blame attaches to Captain Glover or to any of his officers.	Captain Glover acquitted.
39. "Sir Francis Drake," of London. 158 Tons. Official No. 5,615. James Fox, Master.	Stranded near the entrance of the Hokitika River, New Zealand, 27th June 1865.	Inquiry held at Hokitika, before G. S. Sale, Esq., Resident Magistrate, and Mr. John Robertson, late Master of the steamer "Favorite," Nautical Assessor.	An arrangement had been made by letter between the Harbour Master of Hokitika and the Master of the "Sir Francis Drake" that the ensign should be hoisted at the signal station when there was sufficient depth of water for his vessel to enter. Having come down to the bar on the 25th and 27th June he stood off again, as the signal was not flying. On the 30th June he returned, and having signalled to ascertain the depth of water was unable to make out the reply. As the high-water signal was flying at the time, the Master, owing to a drizzling rain, was unable to tell whether it was the ensign, and a boatman having offered to take the vessel over the bar, he consented, although the boatman said she might bump a few times. While making the attempt the vessel struck, and became a wreck. The Court considered that the loss of the vessel was chiefly the result of accident, but they were of opinion that the Master acted most incautiously in placing his vessel in the hands of a boatman, without having first ascertained whether the signal hoisted was the one for him to enter.	Captain Fox acquitted of wilful default.
40. "Sir Ralph Abercromby," of Alcoa. Tons Register 743. Official No. 7,141. Charles Gilbert, Master. C.S.	Abandoned off the Cape of Good Hope, May 20, 1865.	Inquiry held before the Mauritius Marine Board.	The "Sir Ralph Abercromby" was bound to London from Madras and Pondicherry. She left Pondicherry on the 24th March, and had a prosperous voyage up to the 18th May, when in a heavy gale of wind she lost her rudder, and the bowsprit was sprung, but not in a manner to compromise the security of the foremast and foretopmast; the vessel continued tight and seaworthy in all other respects, and the only thing required to enable her to continue the voyage was the making of a jury rudder, for which there were sufficient materials on board. This was not done, but an attempt was made to steer the vessel by means of a hawser and keedge veered over the stern, which did not however succeed. On the 30th the "Martaaba" hove in sight. Captain Gilbert, fearing his vessel would be driven in the Sound, made a signal of distress, and on the "Martaaba" heaving to, he and his crew left the ship. On the following day the Master of the "Martaaba" placed his Second Officer, carpenter, and 10 men on board the "Sir Ralph Abercromby," and they succeeded in taking her into St. Helena.	Certificate of Captain Gilbert suspended for two years. Certificate of James Watt, Chief Mate, suspended for one year. Certificate of James Dalley, Second Mate, suspended for six months.
41. "Success," of Tons. Charles Lavery, Master.	Stranded in Blind Bay, New Zealand, May 4th 1865.	Inquiry held at Nelson, New Zealand, before John Poynter, Esq., Resident Magistrate, assisted by Mr. Henry Closton, Nautical Assessor.	The Court decided that the abandonment of the ship was altogether unwarranted. The Chief and Second Officers admitted that, whilst in their opinion the ship was seaworthy at the time she was abandoned, they neither remonstrated nor protested against such abandonment.	Captain Lavery did not possess a Certificate.
42. "Sydenham," of Montreal. 1,236 Tons. Official No. 46,222. D. G. Harding, Master. C.C. 100, granted by Board of Examiners, Bombay.	Stranded on the S.W. Prong, off Bombay Harbour, 7th Jan. 1865.	Inquiry held at Bombay, before N. W. Oliver, Esq., Police Magistrate, and Captain Wm. C. Barker, Master Attendant and Conservator of the Port of Bombay.	The "Sydenham" left Kurrachee on the 4th January bound for Bombay. At 4 o'clock, on the 7th January, made Malabar Point, bearing East. Continued on S.E. by S. & S. course until the Colaba Light bore N.E. & N. At 7 p.m. the Light House was completely enveloped in smoke, and the land was quite obscured. What was supposed to be the Light Ship showed a very plain bright light bearing S. and by W. & W. The lead was kept going, the leadman reporting 8 and 10 fathoms up and down, and no bottom. At 5 minutes past 7 p.m. the vessel struck very heavily. Hove all aboard immediately, and hauled the courses up. A Pilot came on board at 12 minutes past 7, and after he had been on board about 7 minutes guns were fired from the shore, and blue lights burnt, which the "Sydenham" answered by a rocket. Captain Harding stated that had the Light House people fired the guns before the vessel struck it would have been a warning for him to have kept away to the S. She could not be got off. Men were engaged from H.M. ship "Princess Royal" to dismantle and to pump her. The Court were of opinion that the stranding and subsequent wreck of the "Sydenham" must be attributed to want of ordinary care and precaution on the part of the Master in the navigation of the vessel.	Captain Harding's Certificate suspended for six months.

44. "Teviotdale," of Quebec. 148 Tons. Official No. 46,697. HOWARD CLARK, Master. Extra C.C. 7,241.	Stranded on the banks of St. Roque, 27th November 1864.	Inquiry at Rio Grande do Norte, Brazil, be- fore H. B. M. Vice Consul at Rio Grande do Norte P. Waken, Esq., Merchant, and Mr. Richard Redmore, Master of the British Barque "Ann."	The "Teviotdale" left Elsinore on the 16th of October and made the land at Point Tourons on the 26th of November, having fallen to leeward in consequence of the prevalence of S.S.E. winds. She then worked along the coast, the wind being S.E., and on the 27th November at 4 p.m., while standing towards the land, distant 12 miles, with lead going and crew at stations, the water suddenly shoaled from ten to seven fathoms, and before the ship could gain headway on the opposite tack she struck and remained fast. A vessel of about 1,000 tons was afterwards seen to stand fully four miles inshore of her and reach off again without striking. The Court were of opinion that the vessel had been carefully navigated and attributed her loss to the banks off Cape St. Roque being imperfectly shown on the charts, as although the main part of the banks is only from six to eight miles distant from the shore, points of it extend from 14 to 15 miles.	Captain Clark acquitted of all blame.
44. "Titania," S.S. of Lunceston. 56 Tons. Official No. 32,183. JOSEPH HUGHES, Master. C.C. 3,211.	Stranded on the bar of the Hokitika River, New Zealand, 19th July 1865.	Inquiry held at Hoki- tika by G. S. Sale, Esq., Resident Ma- gistrate, assisted by Mr. John Robertson, late Master of the steamer "Favorite," Nautical Assessor.	On the arrival of the "Titania" off Hokitika the Master, being unprovided with the notice showing the local signals, and wishing to cross the bar, signalled to know the state of the tide. Having been informed, he was standing off to sea when the Harbour Master signalled to inform him at what time the following day the tide would answer, and the Master of the "Titania" looked upon the signal as an invitation to take the bar, and in so doing lost his vessel. The Court attributed the loss of the vessel to a misunderstanding on the part of the Master, and also to his neglect in not having provided himself with a copy of the notice showing the harbour signals. The Court were also of opinion that the Master rashly concluded that the Harbour Master's signal was an invitation for him to enter; but as they considered that the Harbour Master had acted unwisely in signalling without having been first questioned, they partly excused the Master on that account.	Captain Hughes's certificate returned to him.
45. "Taro," of London. THOS. HAZELING, Master. C.C. 10,368.	Stranded at W. of Mount Morrison, on the West Formosan Coast, 20th Septem- ber 1864.	Inquiry held at Shang- hae before John Mark- ham, Esq., H.B.M.'s Vice-Consul, Presi- dent, John E. Chappe, Esq., R.N., Master H.M.S. "Tartar," Henry Jones, Esq., Master of British S.S. "Annette," and W. H. Plummer, Esq., Master of British ship "Anglo Saxon."	This vessel left Shanghai in ballast to load at Manila for England on the 9th September. Left Woosung on 16th September, and proceeded on her voyage. Nothing worthy of note occurred until the 19th September, when at noon on that day the ship's position was 25° 59' N. lat., 120° 35' 30" E. long. At 3 p.m. longitude deduced from sights obtained from three chronometers was 120° 25'. Course steered from noon until 3 p.m. being S.S.W., distance 7½ knots. The high mountain range of north end of Formosa bore S.E. by S. The same course was steered until 8 p.m., wind increasing. Took in all small sails. Stowed the mainmast, and double reefed the foretop sail. At 8 p.m. watch relieved and a look out properly placed. Shaped course S. by W. ½ W. for Formosa Channel. Ship going 7½ knots; the same speed was maintained up to midnight. At midnight, the wind being steady, weather a little cloudy, rounded to and sounded, when no bottom was obtainable at 38 fathoms. The deck was then left in charge of chief officer, the Master leaving him instruc- tions to keep the same course until he returned on deck. At 12.35 the watch reported broken water on port bow. The helm was put hard a port and the yards braced forward on the port braces. When the ship rounded to she came to the ground with her head to the westward. Tried to float her but could not that tide. Made all preparations for getting her off at the next tide, but at daybreak the natives attacked them, stripped the ship, and made several holes through her bottom. Master thought, at midnight, that he was about 21 miles off land. The latest Admiralty chart was used. The Master was of opinion that he could have got her off if the natives had not interfered. The Court considered that the Master, being doubtful as to the position of his ship at the time he went below, should have used greater precaution in heaving the lead, which was not suffi- ciently attended to. The Court, therefore, censured him for getting his ship on shore. It was of opinion, however, that the ultimate fate of the vessel could not be attributed to the Master, as there was every reason to believe that she could have been got off had she not been taken and scuttled by the natives.	Captain Hazeltine censured for not heaving lead.
46. "William Mis- kin," S.S. of Dundee. Official No. 32,479. J. E. DAVIS, Master. Certificate granted by Marine Board, Du- nedin.	Stranded on the rocks at Starling Point, Bluff Harbour, 27th March 1865.	Inquiry held at Camp- beltown before J. Newton, Watt, Esq., Resident Magistrate, and J. B. Greig, Esq., Nautical Assessor.	The "William Miskin" left Port-Charlmers on the 25th of March with a general cargo and passengers, bound for Bluff Harbour and Invercargill. In crossing the Channel the lead was not hove, and, in consequence, the "William Miskin" went, stem on, on to the rocks. The night was dark and hazy, but on entering port the engines were kept at full speed until one minute before she struck. The Master misjudged his distance from the shore, he thinking it was a mile when the real distance was only half a mile. The Court were of opinion that the Master was greatly to blame for not using the lead, and for not taking the ordinary precautions in approaching a shore at night.	Captain Driver's Certificate suspended for six months.

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AN
ABSTRACT OF THE RETURNS
MADE TO THE
BOARD OF TRADE DURING THE YEAR 1865
OF
WRECKS AND CASUALTIES
WHICH OCCURRED ON THE
SHORES OF THE CHANNEL ISLANDS,
ON THE
SHORES OF HER MAJESTY'S POSSESSIONS ABROAD,
AND TO
BRITISH SHIPS AT SEA,
AND OF
Casualties Reported by Her Majesty's Consuls during the
same Period.
WITH A CHART.

Presented to both Houses of Parliament by Command of Her Majesty.



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FOR HER MAJESTY'S STATIONERY OFFICE.

1866.

17659.

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Remarks to accompany the Foreign Wreck Register for 1865.

This Register must be taken only for what it is worth.

Firstly.—As regards foreign countries it only contains casualties reported to the Board of Trade by Her Majesty's Consuls. It does not therefore by any means follow that it contains a list of all the wrecks on the shores of foreign countries.

Secondly.—There is reason to believe that from the short time that the system of collecting wreck statistics from abroad has been in operation very many casualties happening in Her Majesty's possessions abroad as well as casualties to British ships in foreign countries are not reported.

Thirdly.—That the reports extend over different periods.

Fourthly.—The casualties at sea include only casualties to British ships. The casualties reported by Consuls in foreign countries only include casualties to British ships. The casualties reported by officers in Her Majesty's possessions abroad are intended to include all casualties both to British and Foreign ships happening on the coasts, but in most reports sent in foreign ships are not included.

It is hoped that as the returns become more accurate, regular, and trustworthy, this Register will become of value. After the experience of a few years the casualties can perhaps be tabulated and arranged as is done with the report of casualties happening on the coasts of the United Kingdom. In future it is also intended that there shall be separate tables for British and Foreign ships. The tables for British ships will contain all casualties to British vessels in any part of the globe as far as they are reported, and will therefore be tolerably perfect, whilst the tables for foreign ships will necessarily be imperfect.

Board of Trade,
Dec. 1866.

Table 1. Wrecks and Casualties on the COASTS AND ISLANDS OF EUROPE.

Country.	Year.	Casualties.								Tonnage.			Lives imperilled.		Value of Property, &c.	
		Other than Collisions.				Collisions.				Gross Total.			Lost.	Saved by Assistance from Shore or other Ships.	No. of Ships.	Value.
		Total Loss.	Partial Loss.	Total.		Total Loss.	Partial Loss.	Total.		Casualties.	Ships.					
Iceland -	1865	1	-	1	-	-	-	-	-	1	1	393	-	55	-	-
Norway -	1865	4	-	4	-	-	-	-	-	4	4	1,220	-	49	-	-
Sweden -	1864 1865	1	-	1	-	-	-	-	-	1	1	466	-	12	-	-
		8	-	8	-	-	-	-	-	8	8	2,722	16	75	1	1,400
		9	-	9	-	-	-	-	-	9	9	3,188	16	87	1	1,400
Russia -	1865	18	-	18	-	-	-	-	-	18	18	4,820	-	180	1	1,600
Prussia -	1865	4	-	4	-	-	-	-	-	4	4	793	1	2	-	-
Denmark -	1865	11	2	13	-	-	-	-	-	13	13	3,865	8	37	1	1,300
Holland -	1863 1865	2	-	2	-	-	-	-	-	2	2	863	22	-	-	-
		7	-	7	-	3	3	3	-	10	13	986	11	68	4	890
		9	-	9	-	3	3	3	-	12	15	1,849	33	64	4	890
France -	1864 1865	1	-	1	-	-	-	-	-	1	1	1,781	-	50	-	-
		11	3	14	-	-	-	-	-	14	14	1,436	37	589	1	1,000
		12	3	15	-	-	-	-	-	15	15	3,217	37	645	1	1,000
Alderney -	1865	4	-	4	-	-	-	-	-	4	4	724	-	38	-	-

Spain	-	-	1865	4	-	4	2	-	2	6	8	871	-	871	5	28	-	-
Portugal	-	-	1865	4	-	4	-	1	1	5	6	531	297	828	-	20	-	-
Corsica	-	-	1865	-	2	2	-	-	-	2	2	-	256	256	-	-	-	-
Italy	-	-	1865	5	-	5	-	-	-	5	5	823	-	823	1	25	-	-
Malta	-	-	1865	1	1	2	-	-	-	2	2	286	423	709	-	10	-	-
Greece	-	-	1865	4	-	4	-	-	-	4	4	1,661	-	1,661	-	32	-	-
Turkey	-	-	1865	-	-	-	1	-	1	1	2	323	-	323	-	12	-	-
Summary of Wrecks and Casualties on Coasts and Islands of Europe	1863	2	-	2	-	2	-	-	-	2	2	863	-	863	22	-	-	-
	1864	2	-	2	-	2	-	-	-	2	2	2,247	-	2,247	-	68	-	-
	1865	86	8	94	3	4	4	4	7	101	108	21,454	4,347	25,801	79	1,220	8	6,190
		90	8	98	3	4	4	4	7	103	112	24,564	4,347	28,911	101	1,288	8	6,190

Table 2. Wrecks and Casualties on the COASTS OF ASIA.

Country.	Year.	Casualties.										Tonnage.			Lives imperilled.		Value of Property, &c.	
		Other than Collisions.			Collisions.			Gross Total.		Total Loss.	Partial Loss.	Total Loss.	Partial Loss.	Gross Total of Tonnage.	Lost.	Saved by Assistance from Shore or other Ships.	No. of Ships.	Value.
		Total Loss.	Partial Loss.	Total.	Total Loss.	Partial Loss.	Total.	Casualties.	Ships.									
India	1863	1	-	1	-	-	-	1	1	-	-	-	-	-	-	20	-	£
	1864	7	-	7	-	-	-	7	7	5,865	-	5,865	-	5,865	24	162	-	-
	1865	7	-	7	-	-	-	7	7	5,503	-	5,503	-	5,503	2	88	-	-
		15	-	15	-	-	-	15	15	11,368	-	11,368	-	11,368	26	270	-	-
Ceylon	1865	2	-	2	-	1	1	3	4	2,319	-	2,319	-	2,319	2	73	1	6,000
Siam	1864	1	-	1	-	-	-	1	1	286	-	286	-	286	-	14	-	-
The Malayan Peninsula	1865	1	-	1	-	-	-	1	1	1,052	-	1,052	-	1,052	-	28	-	-
China	1865	8	-	8	-	-	-	8	8	2,869	-	2,869	-	2,869	109	85	1	175,000
Java	1865	1	-	1	-	-	-	1	1	258	-	258	-	258	-	-	-	-
Pulo Savon	1865	1	-	1	-	-	-	1	1	276	-	276	-	276	-	-	-	-
The Philippine Islands	1864	2	-	2	-	-	-	2	2	457	-	457	-	457	-	14	1	19,000
	1865	2	1	3	-	-	-	3	3	789	-	789	-	789	-	-	-	-
		4	1	5	-	-	-	5	5	1,246	-	1,246	-	1,246	-	14	1	19,000

Japan	-	-	{	1864	3	-	3	-	-	3	3	569	-	569	-	8	-	
				1865	2	-	2	-	-	2	2	-	-	-	20	-		
					5	-	5	-	-	5	5	569	-	569	28	-		
Rotumah Island	-	-	-	1865	1	-	1	-	-	1	1	126	-	126	-	12	-	
Canen Island	-	-	-	1865	1	-	1	-	-	1	1	888	-	888	22	3	-	
Summary of Wrecks and Casualties on Coasts of Asia	-	-	{	1863	1	-	1	-	-	1	1	-	-	-	-	20	-	
				1864	13	-	13	-	-	13	13	7,177	-	7,177	24	198	1	19,000
				1865	26	1	27	-	1	28	29	14,080	-	14,080	135	309	2	181,000
					40	1	41	-	1	42	43	21,257	-	21,257	159	527	3	200,000

Table 3. Wrecks and Casualties on the COASTS OF AFRICA.

Northern Africa being the southern shore of the Mediterranean	1865	2	1	3	1	-	1	4	5	342	174	516	-	16	-
		1	-	1	-	-	-	1	1	564	-	564	-	17	-
Southern Africa from lat. 20°S. on the west coast to the same lat. on the east coast	1860 1864 1865	2	-	2	-	-	-	2	2	134	-	134	-	9	-
		10	-	10	-	-	-	10	10	3,968	-	3,968	38	444	-
		13	-	13	-	-	-	13	13	4,666	-	4,666	38	470	-
Western Africa, from the Straits of Gibraltar to lat. 20°S.	1864 1865	1	-	1	-	-	-	1	1	154	-	154	-	6	-
		5	-	5	-	-	-	5	5	2,036	-	2,036	24	55	-
		6	-	6	-	-	-	6	6	2,190	-	2,190	24	61	-
Summary of Africa	1860 1864 1865	1	-	1	-	-	-	1	1	564	-	564	-	17	-
		3	-	3	-	-	-	3	3	288	-	288	-	15	-
		17	1	18	1	-	1	19	20	6,346	174	6,520	62	515	-
		21	1	22	1	-	1	23	24	7,198	174	7,372	62	547	-

Table 3. Wrecks and Casualties on the COASTS OF AFRICA—continued.

Country.	Year.	Casualties.										Tonnage.			Lives imperilled.		Value of Property, &c.	
		Other than Collisions.			Collisions.			Gross Total.		Total Loss.	Partial Loss.	Gross Total of Tonnage.	Lost.	Saved by Assistance from Shore or other Ships.	No. of Ships.	Value.		
		Total Loss.	Partial Loss.	Total.	Total Loss.	Partial Loss.	Total.	Casualties.	Ships.									
The Canary Islands	1865	1	-	1	-	-	-	1	1	187	-	187	-	6	-	£	-	
Madagascar	1864	2	-	2	-	-	-	2	2	78	-	78	-	-	-	-	-	
Mauritius	1856	1	-	1	-	-	-	1	1	750	762	-	-	-	-	-	-	
	1857	3	2	5	-	-	-	5	5	1,052	-	1,512	-	-	-	-	-	
	1858	3	-	3	-	-	-	3	3	924	1,087	1,052	-	368	-	-	-	
	1859	2	2	4	-	-	-	4	4	-	1,051	2,011	1	-	-	-	-	
	1860	-	1	1	-	-	-	1	1	-	700	1,051	-	-	-	-	-	
	1861	1	2	3	-	-	-	3	3	-	1,347	700	-	-	-	-	-	
	1862	-	1	1	-	-	-	1	1	-	-	1,347	-	-	-	-	-	
	1863	3	-	3	-	-	-	3	3	2,119	-	2,119	28	-	-	-	-	
	1865	1	-	1	-	-	-	1	1	1,126	-	1,126	19	388	-	-	-	
		14	8	22	-	-	-	22	22	5,971	4,947	10,918	48	756	-	-	-	
Summary of Wrecks and Casualties on Coasts of Africa and Islands	1856	1	-	1	-	-	-	1	1	750	762	-	-	-	-	-	-	
	1857	3	2	5	-	-	-	5	5	1,052	-	1,512	-	-	-	-	-	
	1858	3	-	3	-	-	-	3	3	924	1,087	1,052	-	368	-	-	-	
	1859	2	2	4	-	-	-	4	4	564	1,051	2,011	1	-	-	-	-	
	1860	1	1	2	-	-	-	2	2	-	700	1,615	-	17	-	-	-	
	1861	1	2	3	-	-	-	3	3	-	1,347	700	-	-	-	-	-	
	1862	-	1	1	-	-	-	1	1	-	-	1,347	-	-	-	-	-	
	1863	3	-	3	-	-	-	3	3	2,119	-	2,119	28	-	-	-	-	
	1864	5	-	5	-	-	-	5	5	366	-	366	-	15	-	-	-	
	1865	19	1	20	1	-	1	21	22	7,659	174	7,833	19	909	-	-	-	
	38	9	47	1	-	1	48	49	13,434	5,121	18,555	48	1,309	-	-	-		

Table 4. Wrecks and Casualties on the COASTS OF NORTH AMERICA, including ISLANDS.

British North America	1859	22	2	24	-	-	-	24	24	1,531	60	1,591	14	158	-	-
	1860	16	1	17	-	-	-	17	17	1,330	-	1,330	14	68	-	-
	1861	20	-	20	-	-	-	20	20	1,000	-	1,000	3	85	-	-
	1862	21	-	21	-	-	-	21	21	2,091	-	2,091	3	103	-	-
	1863	14	3	17	-	-	-	17	17	806	1,111	1,917	242	348	-	-
	1864	21	-	21	-	-	-	21	21	1,751	-	1,751	1	100	-	-
	1865	11	-	11	-	-	-	11	11	4,571	-	4,571	-	135	1	100
		125	6	131	-	-	-	131	131	13,080	1,171	14,251	277	997	1	100
Vessels engaged in the Seal Fishery	1859	7	-	7	-	-	-	7	7	617	-	617	-	280	-	-
	1860	3	-	3	-	-	-	3	3	255	-	255	35	95	-	-
	1861	3	-	3	-	-	-	3	3	292	-	292	-	138	-	-
	1862	32	-	32	-	-	-	32	32	3,644	-	3,644	-	1,702	-	-
	1863	4	-	4	-	-	-	4	4	384	-	384	-	183	-	-
	1864	33	-	33	-	-	-	33	33	3,028	-	3,028	-	1,495	-	-
		82	-	82	-	-	-	82	82	8,220	-	8,220	35	3,893	-	-
The United States of America	1861	1	-	1	-	-	-	1	1	-	-	-	-	-	-	-
	1864	1	-	1	-	-	-	1	1	139	-	139	-	7	-	-
	1865	19	1	20	1	-	1	21	22	5,663	-	5,663	2	297	-	-
		21	1	22	1	-	1	23	24	5,802	-	5,802	2	304	-	-
Mexico	1864	1	-	1	-	-	-	1	1	189	-	189	-	10	-	-
	1865	1	-	1	-	-	-	1	1	-	-	-	-	-	-	-
		2	-	2	-	-	-	2	2	189	-	189	-	10	-	-
Central America	1864	4	-	4	-	-	-	4	4	651	-	651	-	22	2	5,287
	1865	3	-	3	-	-	-	3	3	130	-	130	-	29	2	2,700
		7	-	7	-	-	-	7	7	781	-	781	-	51	4	7,987
Bermuda	1865	3	-	3	-	-	-	3	3	714	-	714	1	61	-	-

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Table 4. Wrecks and Casualties on the COASTS OF NORTH AMERICA, including ISLANDS—continued.

Country.	Year.	Casualties.						Tonnage.			Lives imperilled.		Value of Property, &c.	
		Other than Collisions.		Collisions.		Gross Total.		Total loss.	Partial Loss.	Gross Total of Tonnage.	Lost.	Saved by Assistance from Shore or other Ships.	No. of Ships.	Value.
		Total Loss.	Partial Loss.	Total.	Partial Loss.	Total.	Casualties.							
The Bahama Islands	1858	46	-	46	-	-	46	-	-	-	-	-	-	£
	1859	41	-	41	-	-	41	-	-	-	-	-	-	-
	1860	45	1	46	-	-	46	-	-	-	-	-	-	-
	1861	32	8	40	-	-	40	-	-	-	-	-	-	-
	1862	31	6	37	-	-	37	-	-	-	-	-	-	-
	1863	33	2	35	-	-	35	-	-	-	-	-	-	-
	1864	31	17	48	-	-	48	-	-	578	-	22	-	-
	1865	8	4	12	-	-	12	-	-	4,435	3	125	-	-
		267	38	305	-	-	305	3,403	1,610	5,013	3	147	-	-
Cuba	1862	1	-	1	-	-	1	-	-	-	-	-	-	-
	1865	2	-	2	-	-	2	412	-	412	-	-	-	-
		3	-	3	-	-	3	412	-	412	-	-	-	-
Jamaica	1864	2	-	2	-	-	2	701	-	701	-	-	-	-
St. Domingo	1865	2	-	2	-	-	2	528	-	528	-	17	-	-
Virgin Islands	1855	1	-	1	-	-	1	-	-	-	-	-	-	-
	1857	1	-	1	-	-	1	-	-	-	-	-	-	-
	1858	1	-	1	-	-	1	-	-	-	-	-	-	-
	1859	4	-	4	-	-	4	-	-	-	-	-	-	-
	1860	1	-	1	-	-	1	-	-	-	-	-	-	-
	1861	1	-	1	-	-	1	-	-	-	-	-	-	-
	1862	1	-	1	-	-	1	-	-	-	-	-	-	-
	1863	2	-	2	-	-	2	-	-	-	-	-	-	-
	1864	1	-	1	-	-	1	-	-	-	-	-	-	-
		13	-	13	-	-	13	-	-	-	-	-	-	-

Table 4. Wrecks and Casualties on the COASTS OF NORTH AMERICA, including ISLANDS--continued.

Country.	Year.	Casualties.						Tonnage.			Lives imperilled.		Value of Property, &c.	
		Other than Collisions.		Collisions.		Gross Total.		Total loss.	Partial Loss.	Gross Total of Tonnage.	Lost.	Saved by Assistance from Shore or other Ships.	No. of Ships.	Value.
		Total Loss.	Partial Loss.	Total.	Partial Loss.	Total.	Casualties.							
Summary of Wrecks and Casualties on coasts of North America including Islands -	1845	1	-	1	-	-	1	-	-	-	-	-	-	£ -
	1846	2	-	2	-	-	2	507	-	507	-	-	-	-
	1849	3	-	3	-	-	3	728	-	728	-	-	-	-
	1850	2	-	2	-	-	2	127	-	127	-	-	-	-
	1851	1	-	1	-	-	1	307	-	307	-	-	-	-
	1852	1	-	1	-	-	1	305	-	305	-	-	-	-
	1853	1	-	1	-	-	1	225	-	225	-	-	-	-
	1854	1	-	1	-	-	1	160	-	160	-	-	-	-
	1855	2	-	2	-	-	2	-	-	-	-	-	-	-
	1857	2	-	2	-	-	2	-	-	-	7	5	-	-
	1858	47	-	47	-	-	47	-	-	-	-	-	-	-
	1859	74	2	76	-	-	76	2,148	60	2,208	14	438	-	-
	1860	68	3	71	-	-	71	1,585	-	1,585	49	163	-	-
	1861	62	8	70	-	-	70	1,470	-	1,470	7	228	-	-
	1862	91	8	99	-	-	99	6,461	-	6,461	3	1,805	-	-
	1863	57	6	63	-	-	63	1,190	1,111	2,301	242	531	-	-
	1864	97	17	114	-	-	114	7,041	-	7,041	1	1,963	4	5,627
	1865	54	5	59	-	1	60	15,433	1,610	17,043	6	673	3	2,800
		566	49	615	1	1	616	37,687	2,781	40,468	329	5,506	7	8,427

Table 5. Wrecks and Casualties on the COASTS OF SOUTH AMERICA.

East Coast of South America	1863	1	-	1	-	-	1	462	-	462	-	-	-	-
	1864	4	-	4	-	-	4	900	-	900	1	12	-	-
	1865	5	-	5	-	-	5	954	-	954	-	42	-	-
		10	-	10	-	-	10	2,316	-	2,316	1	54	-	-
West Coast of South America	1865	2	-	2	-	-	2	1,127	-	1,127	1	21	-	-
St. Paul's Island	1865	1	-	1	-	-	1	274	-	274	-	10	-	-

Las Rocas Island -	1865	1	-	1	-	-	-	1	1	1,374	-	1,374	-	127	-	-
Falkland Islands -	1865	1	-	1	-	-	-	1	1	294	-	294	-	13	-	-
Lobos Island -	1864	1	-	1	-	-	-	1	1	427	-	427	-	17	-	-
Summary of Wrecks and Casualties on Coasts of South America -	1863	1	-	1	-	-	-	1	1	462	-	462	-	-	-	-
	1864	5	-	5	-	-	-	5	5	1,327	-	1,327	-	29	-	-
	1865	10	-	10	-	-	-	10	10	4,023	-	4,023	-	213	-	-
		16	-	16	-	-	-	16	16	5,812	-	5,812	-	242	-	-

Table 6. Wrecks and Casualties on the COASTS OF AUSTRALIA.

Australia -	1852	1	-	1	-	-	-	1	1	127	-	127	-	-	-	-
	1853	1	-	1	-	-	-	1	1	127	-	127	-	-	-	-
	1855	2	-	2	-	-	-	2	2	146	-	146	-	-	-	-
	1856	1	-	1	-	-	-	1	1	213	-	213	-	-	-	-
	1859	1	-	1	-	-	-	1	1	893	-	893	-	23	-	-
	1861	2	-	2	-	-	-	2	2	1,195	-	1,195	-	24	-	-
	1862	1	-	1	-	-	-	1	1	774	-	774	-	43	-	-
	1863	1	-	1	-	-	-	1	1	535	-	535	-	-	-	-
	1865	1	-	1	-	-	-	1	1	3,883	-	3,883	-	107	-	-
		11	-	11	-	-	-	11	11		-		-		-	-

Table 7. Wrecks and Casualties on the COASTS OF NEW ZEALAND.

New Zealand -	1864	1	-	1	-	-	-	1	1	91	-	91	-	6	-	-
	1865	20	1	21	-	-	-	21	21	1,243	-	1,243	-	20	-	-
		21	1	22	-	-	-	22	22	1,334	-	1,334	-	26	-	-

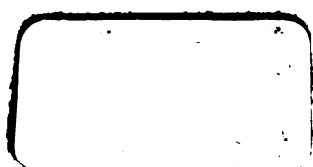
Table 8. Wrecks and Casualties at SEA.

Country.	Year.	Casualties.										Tonnage.			Lives imperilled.		Value of Property, &c.	
		Other than Collisions.				Collisions.			Gross Total.			Total Loss.	Partial Loss.	Gross Total of Tonnage.	Lost.	Saved by Assistance from Shore or other Ships.	No. of Ships.	Value.
		Total.		Total.		Total.		Total.		Ships.								
		Total Loss.	Partial Loss.	Total.	Partial Loss.	Total.	Partial Loss.	Casualties.	Ships.									
Arctic Ocean	1865	-	2	-	-	-	-	2	2	-	474	474	1	17	1	£ 100		
	1859	8	2	-	-	-	-	10	10	892	1,494	2,386	20	-	-	-		
North Atlantic Ocean	1860	3	-	-	-	-	-	3	3	227	-	227	7	14	-	-		
	1861	11	-	-	-	-	-	11	11	1,158	-	1,158	-	50	-	-		
	1862	6	-	-	-	-	-	6	6	1,570	-	1,570	-	23	-	-		
	1863	8	2	-	-	-	-	10	10	435	-	435	7	32	-	-		
	1864	7	15	-	-	-	-	22	22	1,855	-	1,855	6	56	-	-		
	1865	42	46	-	5	5	93	98	14,254	18,193	32,447	34	1,020	32	87,059			
		85	65	-	5	5	155	160	20,391	19,687	40,078	74	1,195	32	87,059			
South Atlantic Ocean	1864	1	-	-	-	-	-	1	1	656	-	656	-	-	-	-		
	1865	1	-	-	-	-	-	1	1	392	-	392	-	-	-	-		
Baltic Sea	1864	2	-	-	-	-	-	2	2	515	-	515	9	5	-	-		
	1865	6	-	1	-	1	-	7	8	1,764	-	1,764	15	41	1	2,000		
Bay of Biscay	1864	8	-	1	-	1	-	9	10	2,279	-	2,279	24	46	1	2,000		
	1865	2	-	-	-	-	-	2	2	571	-	571	-	-	-	-		
China Sea	1864	6	11	-	1	1	18	19	3,194	-	4,194	-	212	2	3,400			
	1865	8	11	-	1	1	20	21	3,194	-	4,765	-	212	2	3,400			
	1864	2	-	-	-	-	-	2	2	1,129	-	1,129	9	38	-	-		
	1865	3	-	-	-	-	-	3	3	463	-	463	-	32	-	-		
	1864	5	-	-	-	-	-	5	5	1,592	-	1,592	9	70	-	-		
	1865																	

English Channel	- {	1864	1	-	1	-	-	-	1	1	90	-	-	-	-	-	-
		1865	1	4	5	-	1	1	6	7	462	1,424	1,886	6	73	4	3,610
Indian Ocean	-	1865	2	4	6	-	1	1	7	8	552	1,424	1,976	6	73	4	3,610
		1865	1	-	1	-	-	-	1	1	1,057	-	1,057	-	28	-	-
Mediterranean Sea	-	1865	1	-	1	-	-	-	1	1	399	-	399	-	11	-	-
		1865	1	-	1	-	-	-	1	1	759	-	759	-	30	-	-
North Sea -	- {	1864	3	-	3	-	-	-	3	3	206	-	206	7	33	-	-
		1865	11	1	12	2	3	5	17	22	2,112	193	2,305	10	85	7	2,205
North Pacific Ocean	-	1865	14	1	15	2	3	5	20	25	2,318	193	2,511	17	118	7	2,205
		1865	1	-	1	-	-	-	1	1	-	-	-	-	4	-	-
South Pacific Ocean	-	1865	3	2	5	-	-	-	5	5	2,333	891	3,224	78	32	-	-
		1865	1	-	1	-	-	-	1	1	704	-	704	-	16	-	-
Southern Ocean	- {	1864	-	1	1	-	-	-	1	1	-	743	743	-	-	-	-
		1865	1	1	2	-	-	-	2	2	704	743	1,447	-	16	-	-
Casualties at Sea, Place of Casualty unknown	- {	1863	2	-	2	-	-	-	2	2	412	-	412	16	-	-	-
		1864	16	-	16	-	-	-	16	16	9,123	-	9,123	242	30	-	-
		1865	18	-	18	-	-	-	18	18	8,334	-	8,334	152	121	-	-
Summary of Wrecks and Casualties at Sea	-	1859	36	-	36	-	-	-	36	36	17,869	-	17,869	410	151	-	-
		1860	8	2	10	-	-	-	10	10	892	1,494	2,386	20	-	-	-
		1861	3	-	3	-	-	-	3	3	227	-	227	7	14	-	-
		1862	11	-	11	-	-	-	11	11	1,158	-	1,158	-	50	-	-
		1863	6	-	6	-	-	-	6	6	1,570	-	1,570	-	23	-	-
		1864	10	2	12	-	-	-	12	12	847	-	847	23	32	-	-
		1865	35	15	50	-	-	-	50	50	14,849	-	14,849	279	178	-	-
		1865	95	67	162	3	10	13	175	188	33,329	25,112	58,441	290	1,706	47	98,374
Total		1864	168	86	254	3	10	13	267	280	52,872	26,606	79,478	619	2,003	47	98,374
		1865															

Table 9. SUMMARY of TABLES.

Tables.	Casualties.										Tonnage.			Lives imperilled.	
	Other than Collisions.			Collisions.			Gross Total.		Total Loss.	Partial Loss.	Gross Total of Tonnage.	Lost.	Saved by Assistance from Shore or other Ships.		
	Total Loss.	Partial Loss.	Total.	Total Loss.	Partial Loss.	Total.	Casualties.	Ships.							
1. Casualties on the Coasts of Europe -	90	8	98	3	4	7	105	112	24,564	4,347	28,911	101	1,288		
2. Do. do. Asia -	40	1	41	-	1	1	42	43	21,257	-	21,257	159	527		
3. Do. do. Africa -	38	9	47	1	-	1	48	49	13,434	5,121	18,555	48	1,309		
4. Do. do. North America -	566	49	615	1	-	1	616	617	37,687	2,781	40,468	329	5,506		
5. Do. do. South America -	16	-	16	-	-	-	16	16	5,812	-	5,812	2	242		
6. Do. do. Australia -	11	-	11	-	-	-	11	11	3,883	-	3,883	-	107		
7. Do. do. New Zealand -	21	1	22	-	-	-	22	22	1,334	-	1,334	-	26		
8. Casualties at Sea -	168	86	254	3	10	13	267	280	52,872	26,606	79,478	619	2,003		
	950	154	1,104	8	15	23	1,127	1,150	160,843	38,955	199,698	1,258	11,008		



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